The SQUARE-NURSE merger in Greater Manchester: the impact of social and spatial identity on phonological variation

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Submitted for the degree of MSc by Research
The University of Edinburgh
2006

Abstract

This study examines the SQUARE/NURSE merger in three neighbouring locations in Greater Manchester. Several approaches are used to provide explanations for the geographical patterns of variation that are observed. These include traditional dialectological approaches and more recent ideas of dialect geography that take speakers' perception of their social and geographical identities into account. A usage based approach to accounting for phonological variation and change is applied to the data by considering word-frequency as a variable. The implications of variation in the SQUARE/NURSE merger for speakers' phonological systems are considered by comparing the situation for Greater Manchester SQUARE/NURSE with other phonological mergers and splits.

Acknowledgements

I would like to thank Patrick Honeybone and Graeme Trousdale for their support and advice this year.

I am grateful to the AHRC for funding my research.

Finally, I owe a debt of thanks to the people involved in my fieldwork in Greater Manchester. The staff and pupils of the schools I visited this year, together with the staff and residents of the care homes I visited, were willing to invest time and effort in helping me with my fieldwork, and made the process of data collection rewarding and enjoyable.

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1 Introduction

In a discussion of links between the fields of traditional dialectology and sociolinguistics, Kretzschmar writes: "The first motivation for all language variation studies is the popular perception that people in different places do not talk the same" (1996: 278). Traditional dialectology treats linguistic variation geographically, presenting patterns of variation on maps with isoglosses showing the borders between areas where different variants are heard (see Orton *et al.* 1978), or by using a range of symbols plotted on a map to show which variant is found in each location surveyed (see Kolb *et al.* 1979). However, the rise of sociolinguistics has to some extent overshadowed traditional dialectology: Kretzschmar mentions current perceptions of sociolinguistics as the "gold standard" and dialectology as a "weaker currency" (1996: 278). Sociolinguistic research has shown that it is clearly not the case that everyone in a given geographical location speaks the same way, yet that is all that can be shown in some traditional dialect atlases. Sociolinguistic investigations, carried out from the 1960s onwards, correlated linguistic variation with a range of social variables. However, until fairly recently these investigations tended to be carried out in single urban locations, and geographical space has been "unexamined, untheorized, and its role in shaping and being shaped by variation and change untested" (Britain 2002: 603). In this dissertation, I show some ways in which geographical space can be analysed as one contributory factor to phonological variation and change.

1.1 Context and aims of this research

This research project examines one phonological feature found in traditional surveys of southern Lancashire speech, the SQUARE/NURSE merger (Wells 1982: 361), which is variable within Greater Manchester, an area traditionally part of southern Lancashire. The data for this dialect survey were collected in locations that are geographically close together, but whose inhabitants may be expected to have different phonological systems based on the historical dialect data that are available (see Barras 2005: §1.1). The three locations are Bolton, urban Salford and Walkden, which lies in between Bolton and urban Salford, and is within the Salford local government area, but is very close to Bolton (see Figure 1.1). All three of these locations are part of Greater Manchester, and while there are some social, cultural and economic factors that unite them, there are others which suggest that these near neighbours have separate identities.

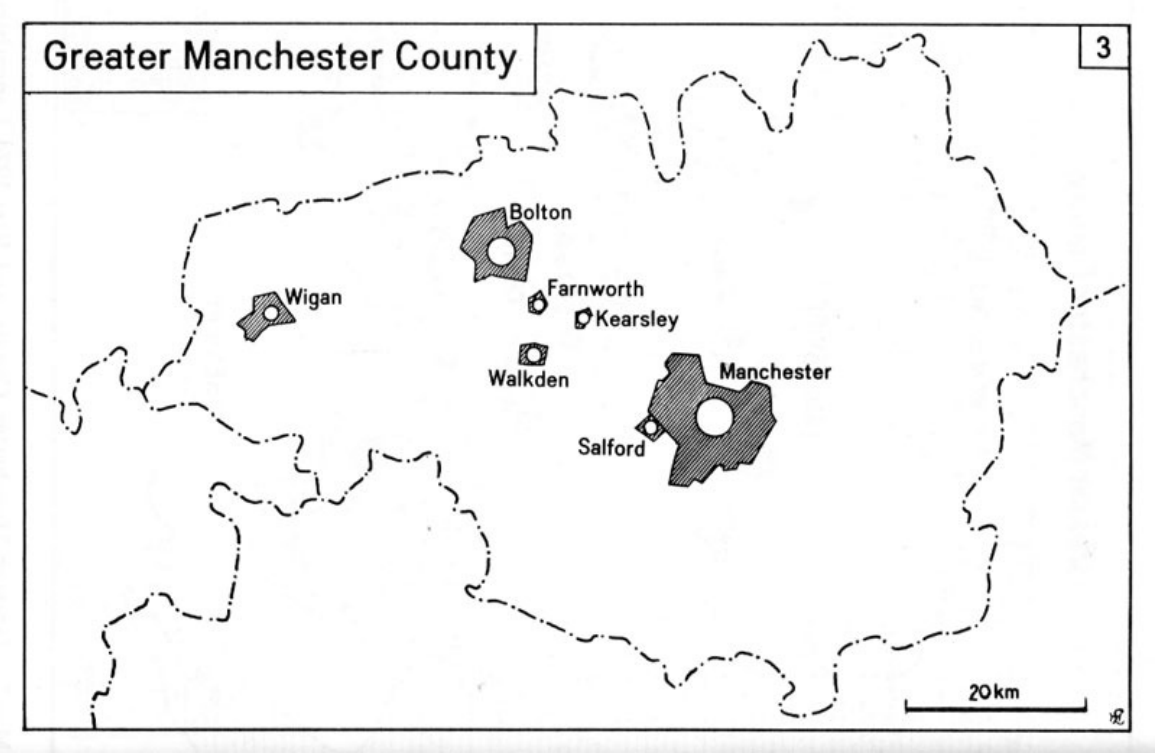


Figure 1.1 Bolton, Walkden and Salford/Manchester (adapted from Shorrocks, 1998:6)

This research project follows from an earlier pilot study that considered the SQUARE/NURSE merger in the speech of working class female adolescents and pensioners in Bolton (Barras 2006). The main findings of the pilot study were that the merger is present in the speech and perception of most teenagers and pensioners in my sample in Bolton, but that for a smaller number of Bolton speakers there seems to be a mismatch between their production and perception. These speakers did seem to produce a contrast between the two sets, but were then unable to perceive such a contrast in a commutation test.

This dissertation sets out to broaden the scope of the research by investigating geographical variation. However, this geographical variation is not merely "treated as a blank stage on which sociolinguistic processes are enacted" (Britain 2002: 603). Instead, geography is used to structure an investigation of a number of potential factors influencing linguistic variation. I begin with an account of the historical and recent development of Greater Manchester which describes the potential for multiple identities for residents of Greater Manchester. Section 2 describes the methods employed in my fieldwork. Section 3 presents the results of my survey arranged by geographical area and speakers' age. Section 4 presents analysis of variation in Greater Manchester SQUARE/NURSE using several geographical approaches: traditional geographical description of dialect variation; the concept of spatiality, which takes

people's views of their geographical identity into account; and recent ideas of dialect levelling which propose that a large city such as Manchester may influence surrounding smaller towns leading to widespread adoption of the city variants at the expense of the local town variants. Section 5 considers the impact of word frequency on the presence of the merger in the three geographical locations, given that if there is variation, it may affect words differently according to their frequency of occurrence. This section also considers the effect of a possible conditioning factor: the presence or absence of /r/ (realised as [ɹ]) immediately following the SQUARE or NURSE vowel. Section 6 considers phonological explanations of other mergers and splits which may be similar to SQUARE-NURSE in Lancashire in terms of their implications for speakers' phonological systems. My aim is to show that phonological factors, usage based factors of lexical frequency and social factors such as variation in age of speakers and variation in their perception of their geographical and social identities are all potentially relevant in the explanation of geographical patterns of linguistic variation.

1.2 Historical development of Greater Manchester

The historical development of the Greater Manchester region is important when considering present day identities and loyalties across the region. Mill towns such as Bolton developed rapidly in the nineteenth century, and a group of these towns surrounded the city of Manchester. Several accounts of the social history of Greater Manchester suggest that the outlying towns seem to have developed conflicting identities, seeing themselves as separate from Manchester, and yet at the same time being part of a large conurbation. For example, Deas and Ward write that "the towns of Bolton, Bury, Rochdale, Oldham, Ashton, Stockport and Salford grew as distinct nodes within this broader integrated 'industrial region'…linked but separate towns" (2002: 116). However, Bee writes that "by the middle of the nineteenth century, these towns were so close together and had so much in common that we can consider each of them part of a single entity – a giant Manchester" (quoted in Taylor *et al.* 1996: 49). Certainly in terms of 'bricks and mortar', the towns are linked together. Indeed, this is the case on an even wider scale in the North West of England. In the nineteenth century, Engels predicted that Manchester and Liverpool would meet at Warrington if they continued their rate of growth and "the prophecy has been fulfilled; the Merseyside agglomerate has now merged completely with the Manchester/Salford urban district" (Sharpless 1978: 139). This has interesting implications for other social and cultural links though. Liverpool and Manchester have quite separate

identities, and strong rivalry, as indicated by Peck and Ward: "when Manchester was soundly defeated in its attempt to stage the 2000 Olympics, the cheers that went up in Sydney certainly had their echoes on Merseyside" (2002: 15). Clearly it takes more than a spread of urbanisation to create a social identity.

If the outlying towns of Greater Manchester are part of a general urban spread, the "giant Manchester" mentioned by Bee, it does not necessarily mean that there is a single Mancunian identity across the region. Again, accounts of Manchester's history support this. Roberts writes that, compared to its outlying towns, Manchester provided more opportunities both for professional and 'white-collar' work and for casual and unskilled work. As a result, "the Manchester population was … a somewhat more cosmopolitan one than that of Oldham and the other textile towns" (1978: 85). The implication here is that because the economy of a town such as Oldham or Bolton was so dominated by the textile mills, the population would be fairly uniform and stable. This would be in contrast to the wider social mix in central Manchester. This contrast may have had an impact on the linguistic development in a town such as Bolton, the population of which could perhaps be more linguistically conservative and resistant to new linguistic variants than the population of central Manchester.

More recent political and economic developments in Greater Manchester are also potentially relevant in a discussion of social identity. In the 1990s, there were several initiatives to regenerate Manchester following the economic slump of the late 1980s. Some of these emphasised a general label of 'Manchester', which was intended to include neighbouring areas with traditionally separate identities. The City Pride initiative was introduced in 1994 as a means of setting out a broad vision for urban regeneration in Greater Manchester. It was extended to involve Trafford and Salford as well as Manchester city: the leaders of Salford and Trafford councils were persuaded to take a "Manchester-centric view of local urban development" (Deas and Ward 2002: 122). In 1997, the Manchester Investment and Development Agency Service (MIDAS) was set up, and its remit extended across Greater Manchester. Deas and Ward claim that this "reiterated the city's long-standing desire to embrace its neighbours more formally" (2002: 126). Given this organisation's acronym, this was clearly intended to be wealth-creating "embrace" which would metaphorically turn Manchester's neighbours to gold. Manchester City Council helped to set up an organisation called Marketing Manchester in 1997, and Deas and Ward describe an

"attempt to conflate Manchester with Greater Manchester, the North West and the North of England" (2002: 129). However, Marketing Manchester was aware of potential problems in attempting to brand a wide area as "Manchester". A document giving guidelines for advertising agencies states that, "The whole 'city-region' will be referred to as Manchester" but this will require a campaign to "inspire support for a potentially difficult concept e.g. for a lifelong resident of a town such as Oldham to be proudly projecting the area as part of Manchester" (Marketing Manchester 1996, quoted in Deas and Ward 2002: 130). Deas and Ward give the reaction of a local politician and businessman to this idea; he expresses it in very strong terms:

> I am not a Mancunian, I am a Rochdalian, and I regard Rochdale as part of the city region. And Rochdale is very different from Tameside, and is very different from Stockport … If you said to a Rochdalian that the city centre of Manchester dominated their lives they'd slit your throat. So you must be careful. (Deas and Ward 2002: 130)

This emphasises the duality of identity that seems to be felt in the towns that make up Greater Manchester: although there is some concept of being a part of a large city region, and this has been emphasised by some local government initiatives in the past decade, there is also a very strong identification with a particular smaller town. Taylor *et al.* explain that "the idea of being a citizen of somewhere called Greater Manchester was always weaker than the sense of identity that comes from birth or residence in individual towns…across that conurbation" (1996: 77). Section 4 will investigate links between linguistic variation and this variation in feelings of identity. Section 2 describes the methods I used to gather data for this investigation.

2 Method

2.1 Selecting locations and speakers

My interviews took place in three locations within Greater Manchester: Bolton, Walkden and Salford (see Figure 1.1). Apart from place of residence, other potential social variables were kept constant in my selection of speakers, so I interviewed only working class females, but I continued the approach in my pilot study of interviewing two age groups. This means that the plan for my fieldwork was to interview speakers to fill the cells in the table below.

	Bolton	Walkden	Salford
Teenagers	Four speakers	Four speakers	Four speakers
Pensioners	Four speakers	Four speakers	Four speakers

Figure 2.1 Planned sample of Greater Manchester speakers

There are four speakers in each cell so that a discussion of, for instance, "Bolton working class teenage girls", is based on several speakers. However, given that individual speakers may show different patterns of variation, I have a manageable number of informants which will allow me to consider the data from individual speakers where this is useful. This plan entails the collection of data from 24 informants, and should allow comparison between groups of speakers across the rows, which would indicate geographical dialect variation, and down the columns, which would indicate age-based variation. Any variation with age may suggest a change in the speech in a given area, using an apparent time hypothesis (Chambers and Trudgill 1998: 151). This hypothesis would assume that older speakers' use of language indicates the state of the dialect when they acquired it in childhood, and that if younger speakers speak differently, the dialect had changed by the time they acquired it.

As in my pilot study, I planned to gain access to speakers through institutions: care homes for the elderly and schools. This turned out to be a lengthy process with quite a low success rate: even institutions that did respond were sometimes too busy with inspections or other events to help in my research. This had an effect on the overall plan of my fieldwork: I was unable to interview teenage speakers in Salford

(see Figure 2.2). In order to meet standards for research ethics (Milroy and Gordon 2003: 79) I prepared informed consent forms (see Appendix 2) which I used for both my sample age groups. The basic criteria for my selection of speakers in each institution were that the informant needed to have been born in the local area and lived all her life there. This is an adaptation of a typical method of traditional dialect surveys that use "non-mobile older rural males" (Chambers and Trudgill 1998: 29). Given my aim of investigating the effect of geographical space, using non-mobile speakers is a method of controlling space as a variable. I wished to interview working class speakers, and despite not having access to detailed socio-economic data on each of my speakers, I tried to be consistent in my selections: certainly all of my older speakers were non-mobile, given that they had lived all their lives in the same area. They had all left school at 14, apart from one who had left at 16, and they had all had jobs in cotton mills and shops. I judged them to be working class using these criteria. My younger speakers were all aged 14 and clearly didn't have the same patterns in their life history as the older speakers. However, they were all locally born, and their parents worked in shops or in manual occupations. Although this is not detailed socio-economic information, it seemed that my younger speakers were comparable both to each other, and to the older speakers. I interviewed four speakers in each cell of my sample, but because I was unable to interview teenagers in the schools I contacted in Salford, my final sample size was twenty speakers as shown below.

	Bolton	Walkden	Salford
Teenagers	Four speakers	Four speakers	-
Pensioners	Four speakers	Four speakers	Four speakers

Figure 2.2 Actual sample of Greater Manchester speakers

2.2 Planning the structure of the interviews

The aims of the data collection were to elicit tokens of SQUARE and NURSE words in a range of styles of speech, and as discussed in 1.1 above, to elicit words with a range of frequencies of occurrence and to control the phonological context for the vowel in terms of the presence or absence of a following onset position /r/. I planned to achieve these aims by dividing the interview into a number of sections. First I would record

casual conversational speech. The approaches adopted in my pilot study proved reasonably successful: in that study my informants and I discussed the local area, older speakers' memories of how life in the area has changed over the years, younger speakers' thoughts about school and their ambitions for the future. The conversations allowed me to elicit potentially useful biographical information, and information about the informants' attitudes to people from inner Manchester/Salford and to people from more suburban parts of the Greater Manchester region. However, while this approach was successful in generating talk, and also useful for finding out background information about speakers' attitudes and views, it did not always produce many tokens of SQUARE and NURSE words. With this in mind, I designed a picture task and a map task that were intended to elicit SQUARE and NURSE words, but to maintain a relatively informal casual speech style.

The picture task (see Appendix 3) involved a set of shapes, including a square and a circle, and a series of images superimposed on the shapes. Speakers had to identify the odd shape out each time and explain why. So typically a speaker might say, "The square is the odd shape out because it has a strawberry in it and the other shapes all have pears." In practice, this turned out to be very effective, with nearly all speakers, both old and young, producing many tokens of SQUARE and NURSE words. The map task (see Appendix 3) involved a map of a fictional place with street names and buildings that included SQUARE and NURSE words: the airport, the Furniture Warehouse, Claremont Nursing Home, Bulgaria Drive and so on. The informants would have to give directions from one place to another on the map, explaining which streets to go down, and what buildings they would pass on the way. Again, this proved successful: many of the informants became very occupied with the details of giving alternative directions in case there were one way streets or roadworks. This meant that although the task did involve the reading of place names from the map, the focus of the informants was clearly on the giving of directions rather than the pronunciation of words as it might be in a task involving reading a list of minimal pairs for instance. Both of these tasks elicited relevant tokens, and fell somewhere between free conversation and a reading style of speech. With this in mind, I decided to keep the results from each section separate and to present and analyse them as separate speech styles.

I designed the reading passage and the word list (see Appendix 4) to include a range of high and low frequency words, to allow me to test for correlations between

word frequency and presence or absence of a merger. Data on word frequency was collated from the COBUILD corpus, which was accessed via the WebCelex website (http://www.mpi.nl/world/celex/). The criteria for my selection of these words by spoken frequency will be explained in Section 5.1. In the reading passage, these words were placed in a pre-consonantal context, rather than a pre-vocalic context, because if linking /r/ is generated for some of the words, this may affect my analysis of the vowel produced in these words: a post-alveolar approximant [ɹ] can tend to have a centralising effect on a preceding vowel (Shorrocks 1998: 151, 389. Shorrocks 1990: 27). The word list contains the same SQUARE/NURSE words included in the reading passage, as well as distracter words.

The final part of my interview structure was the commutation test (see Appendix 5). I decided to use the same list of members of (potential) minimal pairs that I used in my pilot study in order to test my informants' abilities to perceive a SQUARE/NURSE contrast. This means that in my presentation of the data on speakers' production I have two word list styles: WLS1 is the long list designed to be able to test possible frequency effects. WLS2 is a much shorter list, consisting of the minimal pairs used in the commutation test.

2.3 Recording the interviews

The interviews were carried out in pairs for the teenagers and for the Walkden pensioners: I had used larger group recordings in the pilot study, but found that some speakers tended to remain fairly quiet. In addition my picture and map tasks lent themselves to pair interaction. My older speakers in Bolton and Salford had to be interviewed individually: there was sometimes only one resident in a particular care home who was suitable for my survey. This meant that I had to be the other person in the picture and map tasks. I was aware of the possibility of my own pronunciations having an effect on the pronunciations of my speakers, and consciously avoided SQUARE and NURSE words.

As in the pilot study, I used a Sharp minidisc recorder and a Sony ECM stereo microphone for recording the interviews. The ability to mark tracks on the minidisc allowed me to carry out the commutation tests on the same day as the main interviews, with only a few minutes' break being needed for me to line up the recording and edit each token onto a track on the minidisc.

2.4 Post-interview procedures including transcription

The recordings were transferred from minidisc into my computer, and each interview was saved as a separate audio file. I then went through each interview noting every occurrence of a SQUARE or NURSE word together with its time in the audio file. This allowed me to find particular tokens fairly quickly, and therefore, to compare my transcriptions for different tokens in an attempt to be as consistent as possible. My transcriptions were auditory, and as in my pilot study, I used a four-point scale of degrees of fronting of the vowel. Each point on my scale includes a range of variation in terms of r-colouring, length, lip rounding and whether the vowel is a monophthong or has a schwa offglide, as shown below:

	Clearly Front Variants	Fudged Front Variants	Fudged Central Variants	Clearly Central Variants
Value on scale	0	1	2	3
Category Label to include the variants in the column below:	ɛː	ɛ̟ː	ɜ̟ː	ɜː
Short variants	ɛ	ɛ̟	ɜ̟	ɜ
With schwa offglide	ɛᵊ	ɛ̟ᵊ	ɜ̟ᵊ	ɜᵊ
With r-colouring	ɛˤ	ɛ̟ˤ	ɜ̟ˤ	ɜˤ
With some lip rounding	ɛ̹ː	ɛ̟̹ː	ɜ̟̹ː	ɜ̹ː

Figure 2.3 SQUARE/NURSE index scale. All my graphs of production use this four point scale.

Having coded each token with a value on my four point index scale, I was able to sort the words into SQUARE and NURSE sets, and hence work out mean values for each speaker's production of SQUARE and NURSE in each section of the interview, allowing the production of graphs of production for each speaker. These are presented in Section 3. All of the raw figures are included in Appendix 6.

Using the data from my reading passage I was able to plot values for individual words arranged by their frequency of occurrence in the COBUILD data for spoken English. These are presented in Appendix 1 and discussed in Section 5.

3. Results arranged by geographical area and speakers' age

The next five subsections present the data from each cell in my sample. Pseudonyms are used for all informants. Some comparisons between the cells are made during the discussion of the results from each cell. In Section 4, I go on to investigate to what extent the concept of identity is useful in explaining patterns in the data in this survey.

3.1 Bolton pensioners' perception and production of SQUARE and NURSE

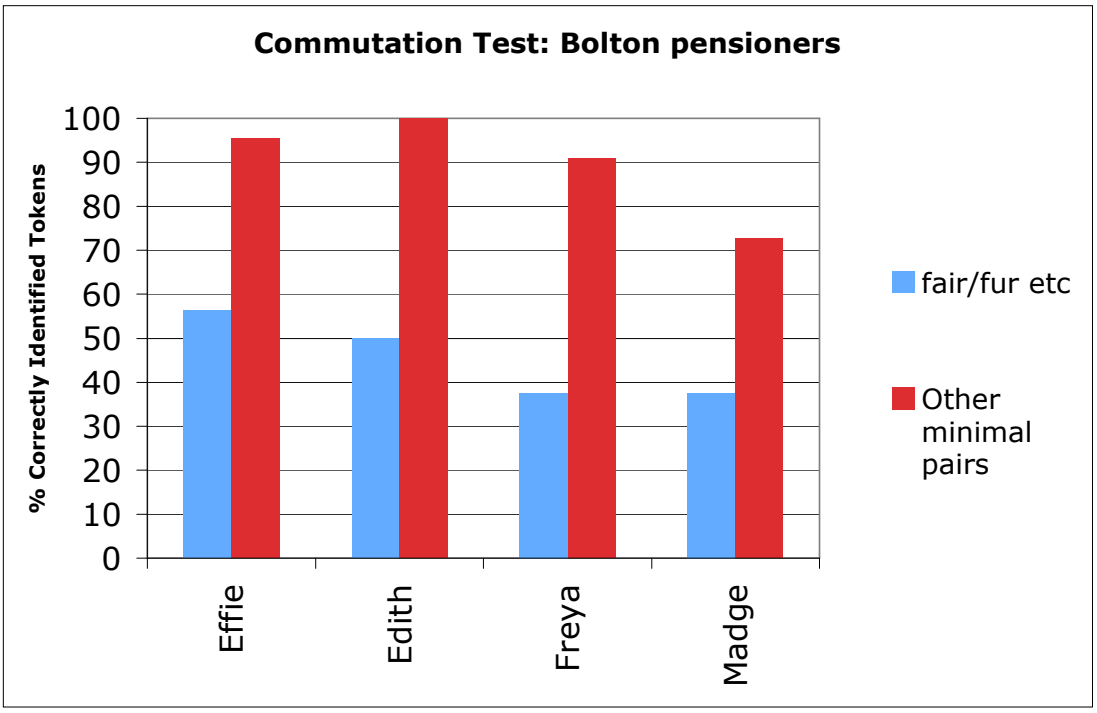


Figure 3.1 Commutation test for Bolton pensioners

Figure 3.1 shows the results of the commutation test for Bolton pensioners in this study. For all speakers there is a large difference between the percentage of correctly identified tokens for members of SQUARE/NURSE minimal pairs, which is near to 50%, and the percentage of correctly identified tokens for other minimal pairs, which is nearer to 100%. My hypothesis, H_1, is that speakers achieve their percentage of correctly identified tokens because they can reliably perceive a contrast between the members of the minimal pair in question. To verify the statistical significance of these scores, I used a binomial sign test[1] to test a null hypothesis, H_0, that a given percentage of correctly identified tokens could be achieved by chance. Taking a one-

[1] Accessed at http://www.graphpad.com/quickcalcs/binomial1.cfm

tailed P value of 0.05 as a threshold for significance, I was unable to reject H_0 for any Bolton pensioner's SQUARE/NURSE score. In contrast, I could reject H_0 for all speakers' scores for other minimal pairs, including Madge who achieved the lowest score of 73% for these pairs: the one tailed P value for her result for the control pairs is 0.0262, meaning she is unlikely to have achieved this result by chance. All my Bolton pensioners could reliably distinguish between members of my distracter minimal pairs, but could not reliably distinguish between SQUARE/NURSE minimal pairs.

In terms of my Bolton pensioners' production of SQUARE and NURSE tokens (see Figure 3.2), there is a mixture of patterns. Effie and Freya have very similar mean scores for SQUARE and NURSE words on my index scale (see Figure 1.3 for the phonetic variants that correspond to the values 0-3 on the index scale). In Freya's case, these similar scores are maintained across the range of speech styles I recorded, from conversational speech, through the more specifically elicited speech in my picture and map tasks, to the reading passage style and word list styles. Effie does seem to increase the difference in her production of SQUARE and NURSE slightly in the final word list style, which consisted of the minimal pairs used for the commutation test. However, she failed the commutation test for SQUARE/NURSE pairs, so this slight increase in a contrast in her production of SQUARE and NURSE words did not affect her inability to perceive a contrast.

Edith shows a slightly different pattern. Her realisations of SQUARE and NURSE are similar in each individual speech style: at their most distinct (WLS1) they are still only one point apart on my index scale. However, as the speech style becomes more careful, both SQUARE and NURSE words are realised with vowels that are more front, shown by lower mean index scores. This suggests perhaps a modification in careful speech, leading to fronted variants for SQUARE words, but an inability to separate NURSE words from a combined SQUARE-NURSE set. This matches Shorrocks' findings: "when [ɛː] or [ɛˑə] types are used, the speaker usually fails to distinguish, or fails consistently to distinguish such pairs as *fur* ≠ *fair*" (1998: 212). Freya, Effie and Edith seem to show a relation between production and perception that makes sense intuitively. Their production of both lexical sets is similar in each individual speech style I recorded, even if both sets are fronted by Edith in more careful speech styles, and all three speakers are unable reliably to perceive a contrast between members of the two lexical sets. However, Madge shows a more surprising pattern. Her

production of SQUARE and NURSE seems to become more distinct as the speech styles become more careful: in the word list styles, the two sets differ by almost 2 points on the scale. However, she was unable to perceive a distinction between the two sets. This apparent mismatch between production and perception seems counterintuitive, and will be discussed further where other speakers show a similar pattern, and in Section 6.2, which deals with the concept of “near merger”.

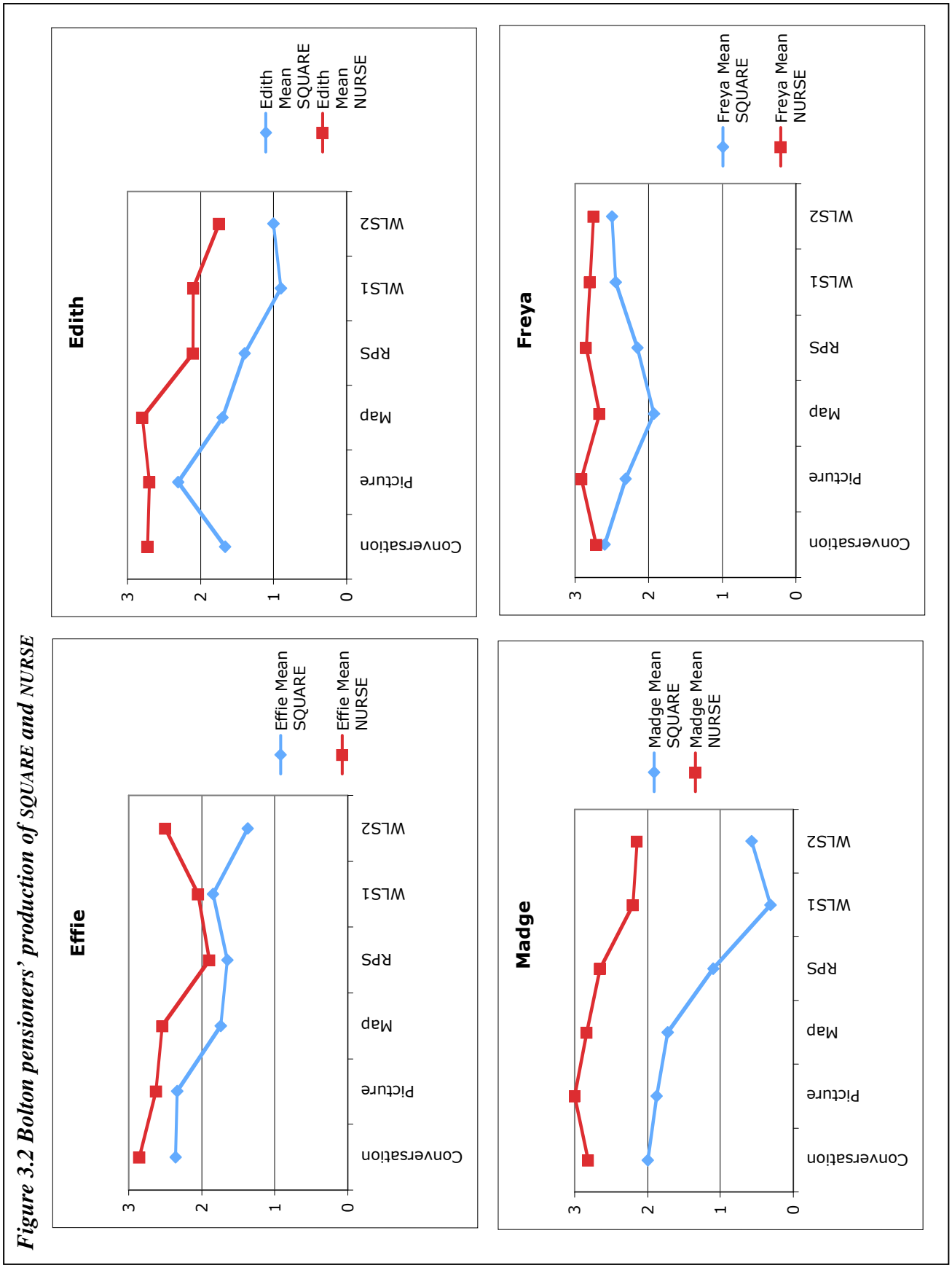


Figure 3.2 Bolton pensioners' production of SQUARE and NURSE

3.2 Walkden pensioners' perception and production of SQUARE and NURSE

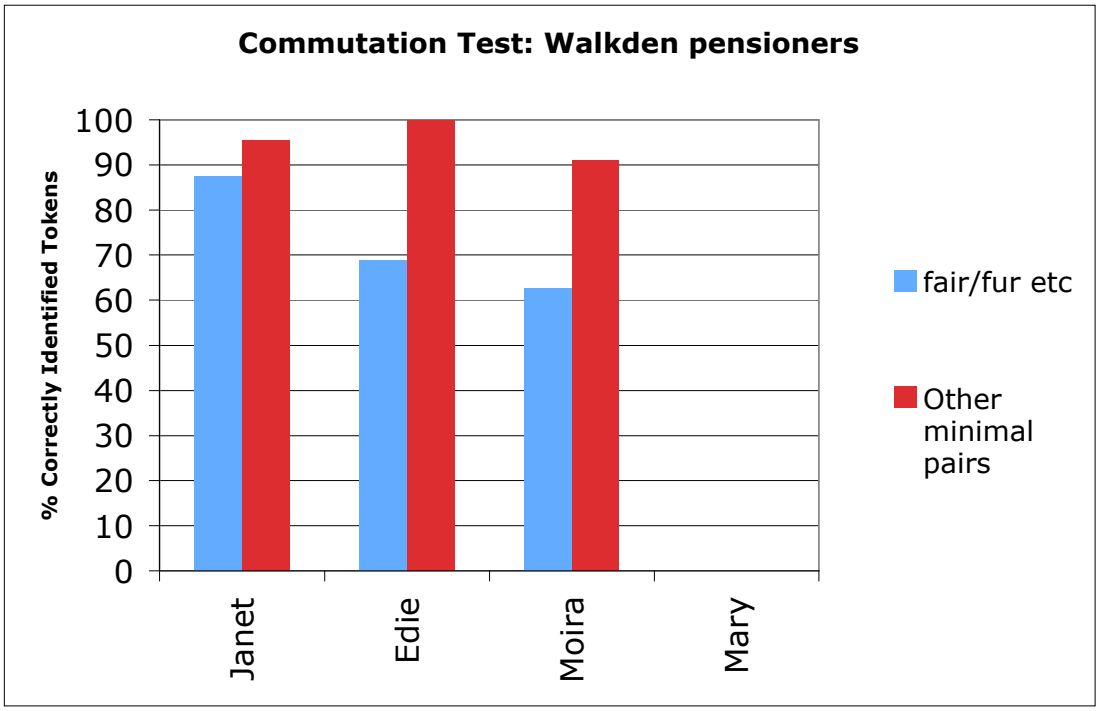


Figure 3.3 Commutation test for Walkden pensioners

Figure 3.3 shows the results of the commutation test for my sample of Walkden pensioners. Mary was unable to complete the sections of the interview which involved reading, as can be seen in Figure 3.4. The same binomial sign test was used as described in Section 3.2 above. All three Walkden pensioners could reliably perceive a contrast between the members of my control set of minimal pairs, but Janet was the only speaker who could reliably perceive a contrast between SQUARE and NURSE pairs. In terms of perception then, Edie and Moira show the same pattern as my Bolton pensioners, albeit with a slightly higher success rate in correctly identifying SQUARE/NURSE tokens, but Janet shows a different pattern.

Figure 3.4 presents the data for Walkden pensioners' production of SQUARE and NURSE. Janet's production of the two sets is distinct by between 2.5 and 3 points on the index scale across all speech styles, and this matches her ability to perceive a contrast between SQUARE and NURSE. Moira's pattern of production is similar to that shown by Edith and Effie in Bolton (Figure 3.2): there seems to be a slight increase in the difference between the SQUARE and NURSE vowels as the speech styles become more careful, and there is also a general tendency for both SQUARE and NURSE to be

realised with a more fronted vowel as the speech styles become more careful. However, despite these two patterns, Moira could not reliably perceive a contrast between SQUARE and NURSE, and this matches the situation for Edith and Effie in Bolton.

Mary was able to complete only some parts of the interview, so a complete comparison of her results with those of other speakers is not possible. It seems that her production of SQUARE and NURSE in the first three parts of the interview is similar to Moira's pattern: the two vowels are variable but their widest separation is just over one point on the index scale.

Edie shows an interesting pattern: in the conversation and map task sections of the interview her production of SQUARE and NURSE is similar to that of Moira and Mary, in all three reading styles (and, surprisingly, in the picture task), her production of the two sets matches Janet's. In having this variation between similar productions of SQUARE and NURSE in some more casual speech styles and contrasting productions of the two sets in more careful speech styles, Edie resembles Madge in my Bolton sample. Like Madge, despite the apparent increase in contrast in the reading styles, Edie was unable to perceive a SQUARE/NURSE distinction, which again seems counter-intuitive.

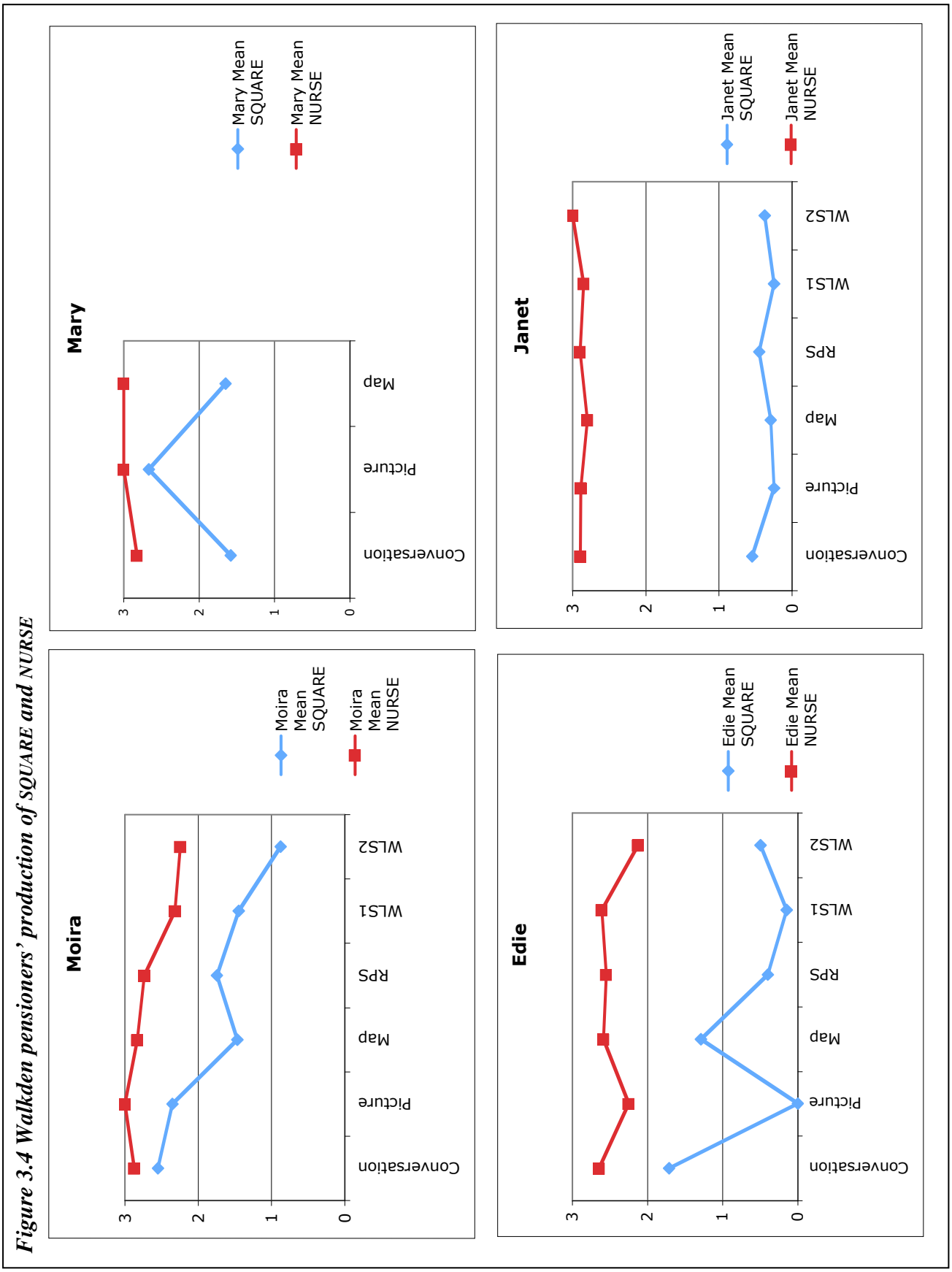


Figure 3.4 Walkden pensioners' production of SQUARE and NURSE

3.3 Salford pensioners' perception and production of SQUARE and NURSE

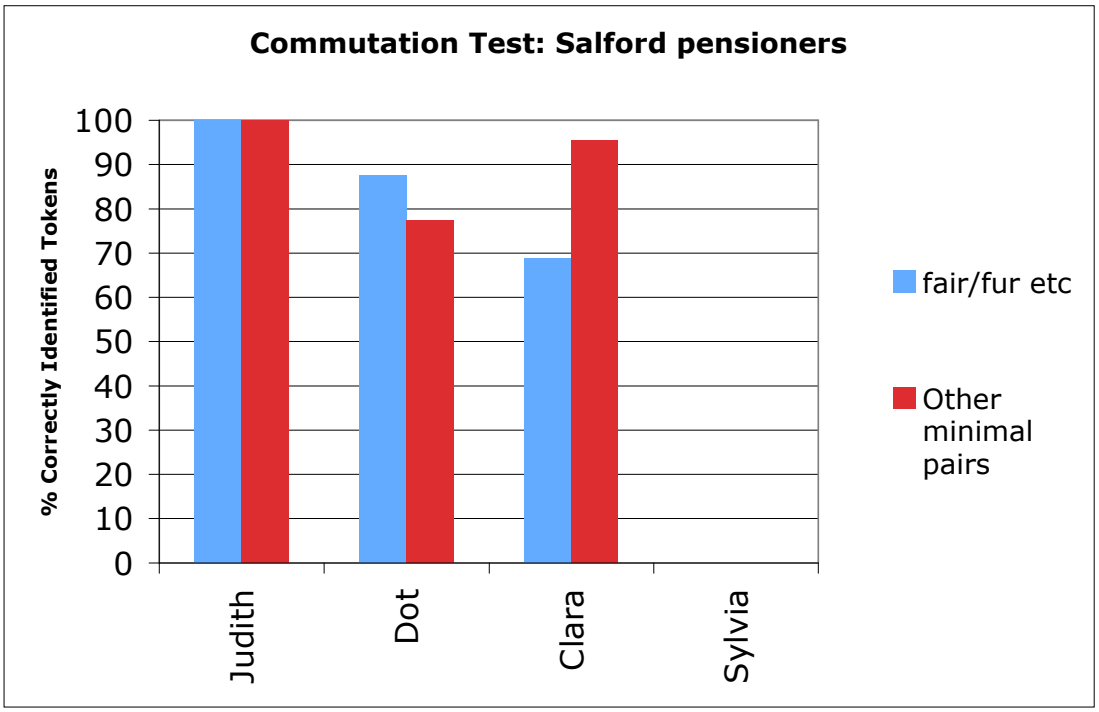


Figure 3.5 Commutation test for Salford pensioners

The results of the commutation test for my Salford pensioners are displayed in Figure 3.5. As was the case with Mary in the Walkden sample, Sylvia was unable to take the commutation test, although she did complete the reading tasks.

Judith scored 100% for the distracter pairs and for the SQUARE/NURSE pairs, clearly a different pattern from my Bolton pensioners and even more consistently accurate than Janet in the Walkden sample. Dot scored slightly less: 88% for SQUARE/NURSE pairs and 77% for the distracter pairs. However, even her relatively low score for the distracter pairs is statistically unlikely to have been achieved by chance: the binomial sign test gives a one-tailed P value of 0.0085, which is lower than the 0.05 level of significance, and allows me to reject the null hypothesis that this result would be likely to be achieved by random guesswork. Clara achieved 95% for the distracter pairs, but 69% for the SQUARE/NURSE pairs. Applying the binomial test to this result for SQUARE/NURSE pairs gives a one-tailed P value of 0.1051, which does not allow me to reject H_0: her result would be quite likely to have been achieved by random guessing. So, Clara matches the inability to perceive a SQUARE/NURSE

contrast shown by all four Bolton pensioners and two Walkden pensioners. In contrast, the other two Salford pensioners who completed the commutation test have a different pattern: they are able reliably to perceive a SQUARE/NURSE contrast.

In terms of their production (Figure 3.6), all four of my Salford pensioners show a different pattern from that shown by the Bolton pensioners: they all produce a contrast of approximately 2 or more points on my index scale across the different speech styles of the interview. Intuitively this makes sense for Judith and Dot who could reliably perceive a SQUARE/NURSE contrast, and seem to be producing such a contrast. The SQUARE/NURSE contrast that Clara produces is more unexpected given that in the commutation test she was found to be unable to perceive reliably a SQUARE/NURSE contrast. It is true that the gap between Clara's production of SQUARE and NURSE is slightly smaller than those of the other three informants. However, the smallest gap is still a difference of 1.6 on my scale, which suggests that Clara has a mismatch between her production and perception, which is similar to that shown by Madge in Bolton and Edie in Walkden. Unlike those two speakers, however, Clara's production of SQUARE and NURSE shows a fairly consistent contrast across all the speech styles in the interview.

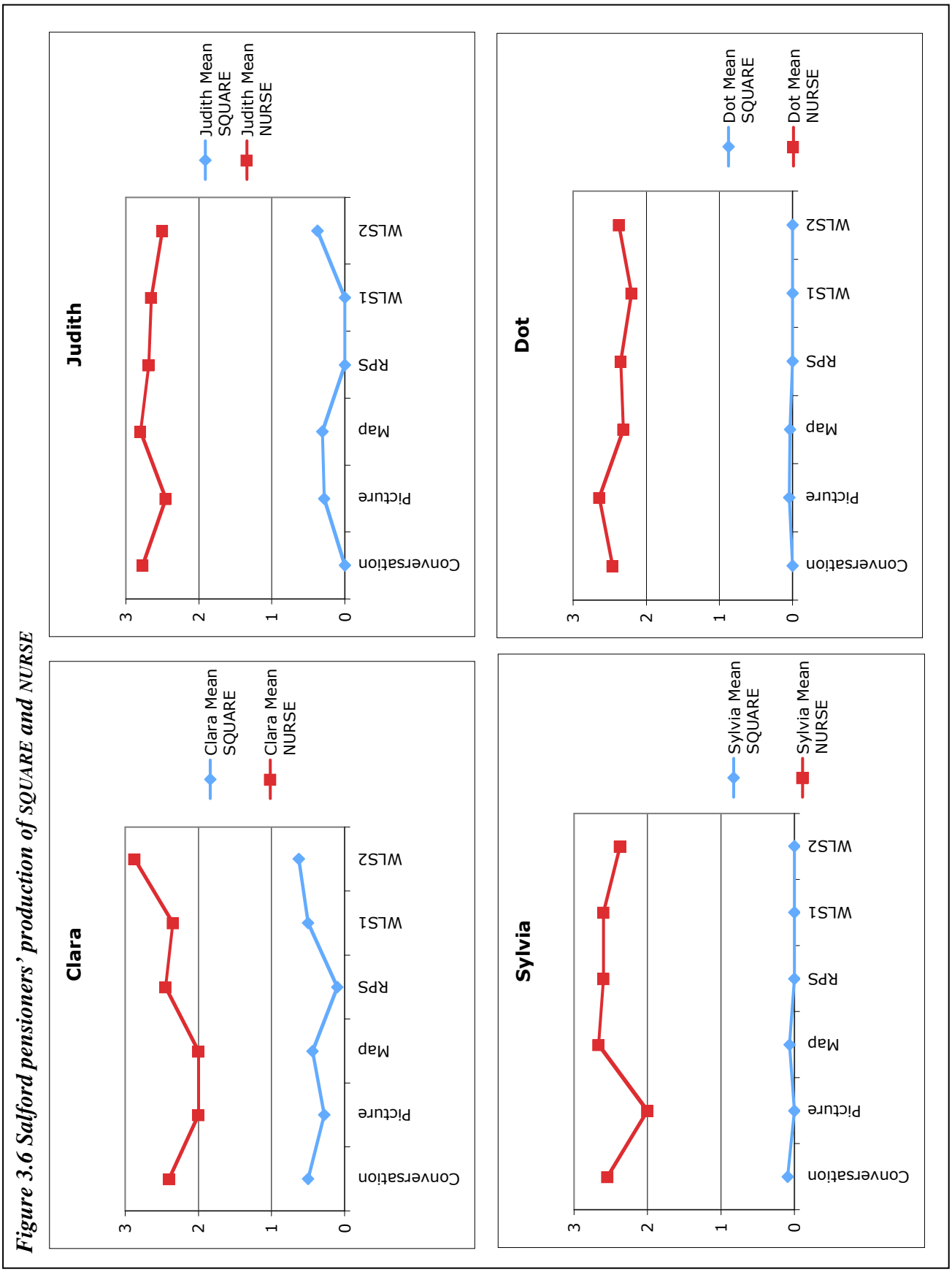


Figure 3.6 Salford pensioners' production of SQUARE and NURSE

3.4 Bolton teenagers' perception and production of SQUARE and NURSE

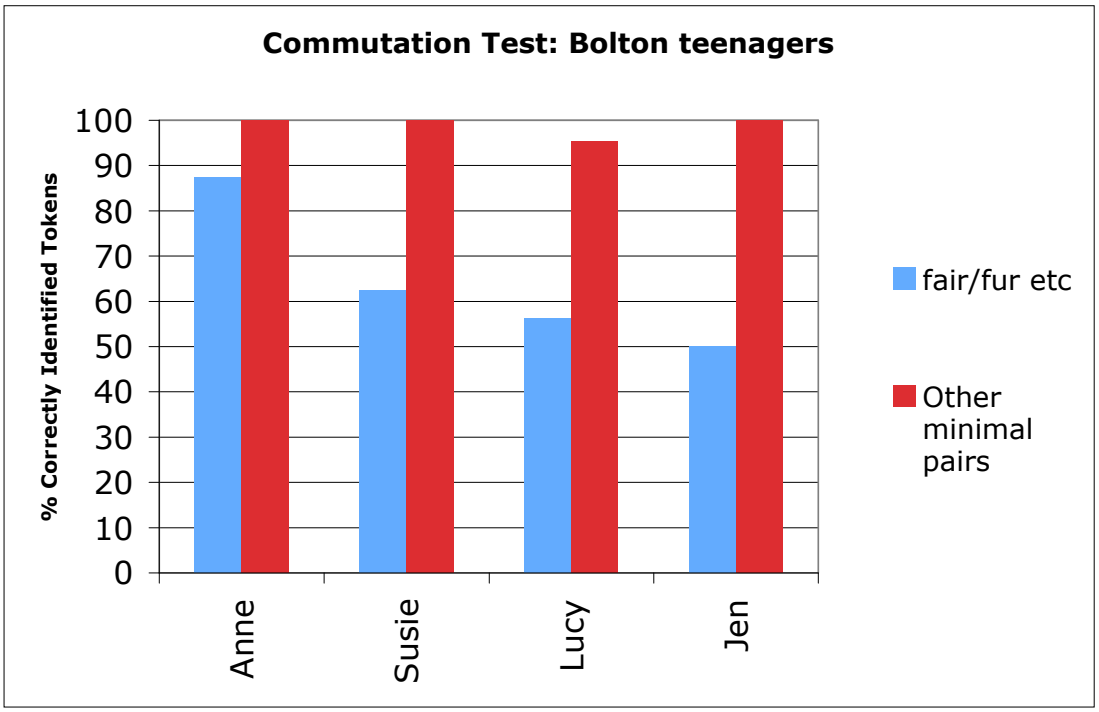


Figure 3.7 Commutation test for Bolton teenagers

Figure 3.7 shows the results of the commutation test for Bolton teenagers. Using the binomial sign test mentioned in Section 3.2 above, all the Bolton teenagers could reliably distinguish between the words in my control minimal pairs, but only one, Anne, could reliably distinguish the members of SQUARE/NURSE minimal pairs.

Examining the production of SQUARE and NURSE by these speakers (Figure 3.8), Lucy and Jen have very similar mean scores for the two sets across all speech styles recorded. This is intuitively compatible with their inability to perceive a distinction. Susie failed the commutation test for SQUARE and NURSE pairs, yet her production of the two sets seems to be consistently different across all speech styles I recorded. Furthermore, the difference is a large one: the mean scores are typically 2 points apart on my index scale. When I first analysed the results of Susie's commutation test (which was carried out before I had obtained similar results for Madge, Edie and Clara as discussed above) the contrast in her production of SQUARE and NURSE seemed so at odds with her result in the commutation test that I wondered whether some other factor had affected her result, and thought that perhaps she had

been randomly guessing. However, such a possibility would still not explain why Susie achieved 100% success in identifying my distracter minimal pairs, yet only 63% for SQUARE and NURSE. With this in mind though, I returned to Susie's school two weeks later and got her to retake the commutation test. Her results were strikingly similar: again she achieved 100% for the distracter pairs and this time 68% for the SQUARE/NURSE pairs. Although this score is slightly higher than in her first test, it still gives a one tailed P value of 0.1051 using a binomial test, and this does not allow me to reject H_0: it is still statistically likely that her score could be achieved by random guesswork. I used the original test score in my presentation the test data for consistency with my other speakers.

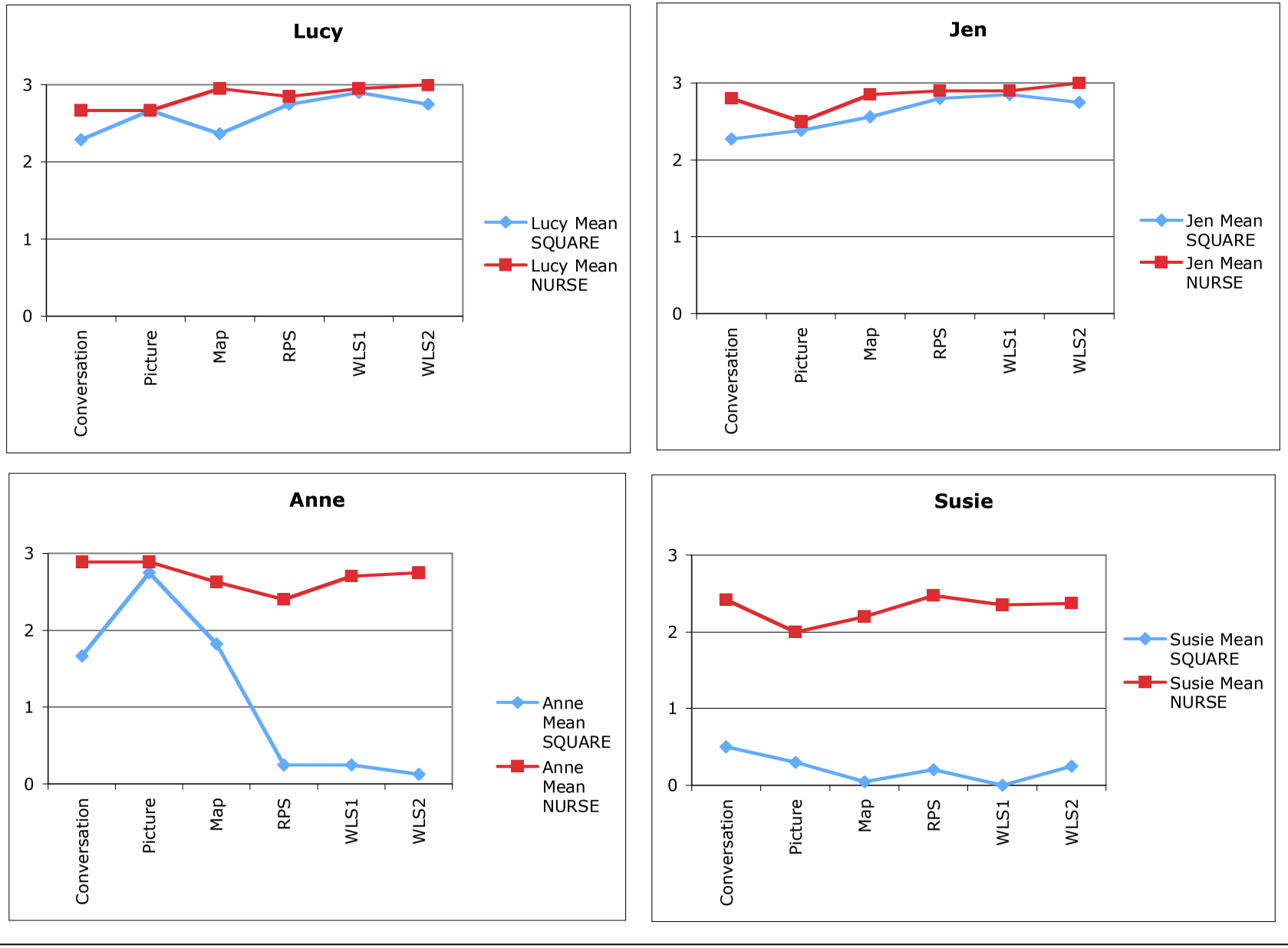
Susie's teacher, who was very interested and keen to help with this research, had wondered whether my speakers, who were in the lowest ability set for English at the school, would be confused by the fact that they had to read the words, and then later match the sounds to the spellings. However, as can be seen from the list of minimal pairs (Appendix 5), these were reasonably familiar, monosyllabic words. Furthermore, Susie was clearly able to cope with identifying the distracter words, so it would seem surprising if spelling ability alone were affecting her ability to identify SQUARE and NURSE words. The situation of a speaker producing a contrast while being unable to perceive one is counter-intuitive. However, such a situation is used by Labov in his discussion of "near-mergers" (1994: Chapter 12), and has also been used by Nunberg (1980) to explain historical mergers and splits (see further Section 6.2). The concept of near-merger may be useful in my Bolton data, although it is worth noting that for Susie, as for Clara in the sample of Salford pensioners, the magnitude of the contrast in production on my index scale is surprisingly large for such an explanation.

Anne, the only Bolton teenager in my sample who passed the commutation test for SQUARE/NURSE pairs, shows a similar pattern to Madge (Figure 3.2) and Edie (Figure 3.4): her production of SQUARE and NURSE seems to vary across the styles of speech I recorded. In the three reading styles she seems to be making a consistent contrast between SQUARE and NURSE, of more than 2 points on my index scale. However, in earlier parts of the interview involving spontaneous speech and some interaction with another speaker (Susie), her production of SQUARE is much more central. Indeed, in the picture task data, her mean index score for SQUARE words is 2.75, compared to 2.89 for NURSE words. This could be evidence that she is able to

switch between two phonological systems. She may have a system with a SQUARE/NURSE merger in casual or spontaneous speech, but perhaps has access to a different system that she uses when reading, which has a consistent SQUARE/NURSE contrast. However, it did not particularly seem that Anne was using a modified reading voice in the later parts of the interview, other than the difference in her realisation of SQUARE words. For instance, she did not seem to attempt a FOOT/STRUT split, which is often a feature of modified northern English speech (Trudgill 1986: 155).

Another possible explanation involves comparison with the situation in the speech of my Salford and Walkden speakers and will be discussed in Section 4.5.

Figure 3.8 Bolton teenagers' production of SQUARE and NURSE



3.5 Walkden teenagers' perception and production of SQUARE and NURSE

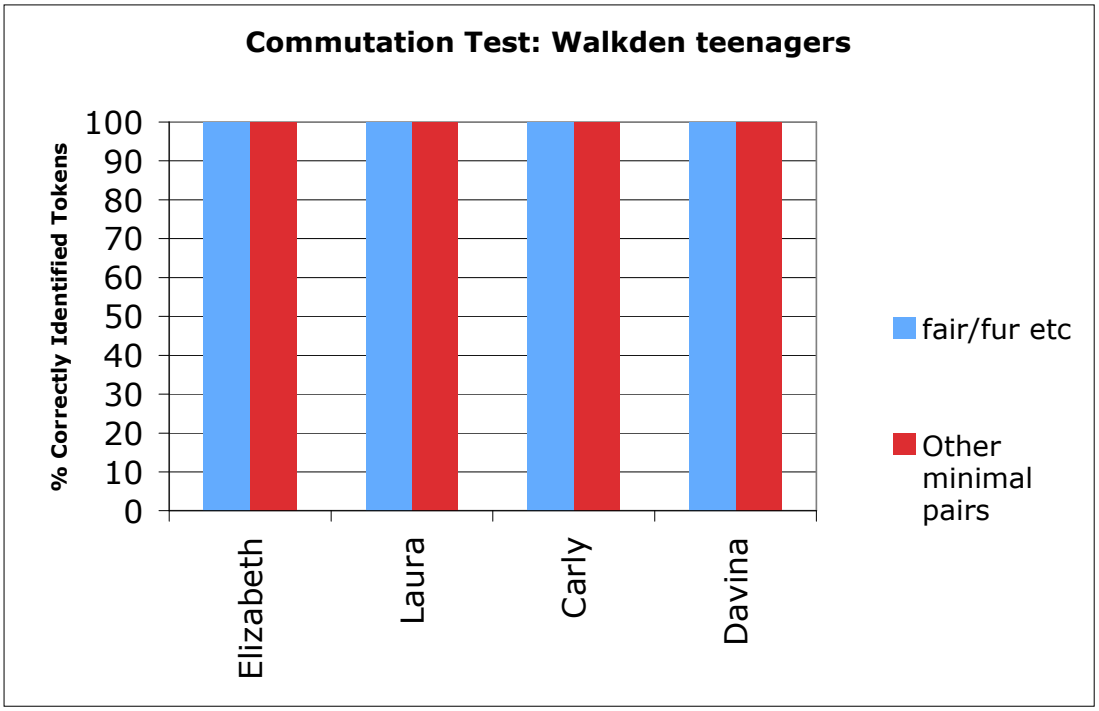


Figure 3.9 Commutation test for Walkden teenagers

Figure 3.9 shows the most consistent pattern for the commutation test for any of the cells in my sample: all four of the Walkden teenagers correctly identified all tokens whether they were members of SQUARE/NURSE minimal pairs or members of my control set of minimal pairs. This is a clear contrast with the Bolton teenagers, despite the close geographical proximity of the two locations (see Figure 1.1).

This ability to perceive a SQUARE/NURSE contrast is matched by these speakers' production of the two sets. Figure 3.10 shows that all four speakers have a large contrast in production across all the speech styles in the interview. Carly seems to have slightly less contrasting production of SQUARE and NURSE in the non-reading styles (conversation and the picture and map tasks), although even at its closest point, her production of the two sets is still 1.5 points apart on my index scale. In addition, this closeness is caused by a fronting of NURSE as much as a centring of SQUARE. This is different from other speakers such as Anne (see Figure 3.8), whose production of SQUARE and NURSE becomes closer through centring of SQUARE, with NURSE being realised with a fairly consistently central vowel. In any case, this variation seems to have no effect on Carly's ability to perceive a contrast. This suggests that even where

one of my Bolton teenagers, Susie, resembles the Walkden teenagers in terms of her production of SQUARE and NURSE, there is still a difference in terms of perception. This difference between Bolton and Walkden speakers will be discussed further in Section 4.2.

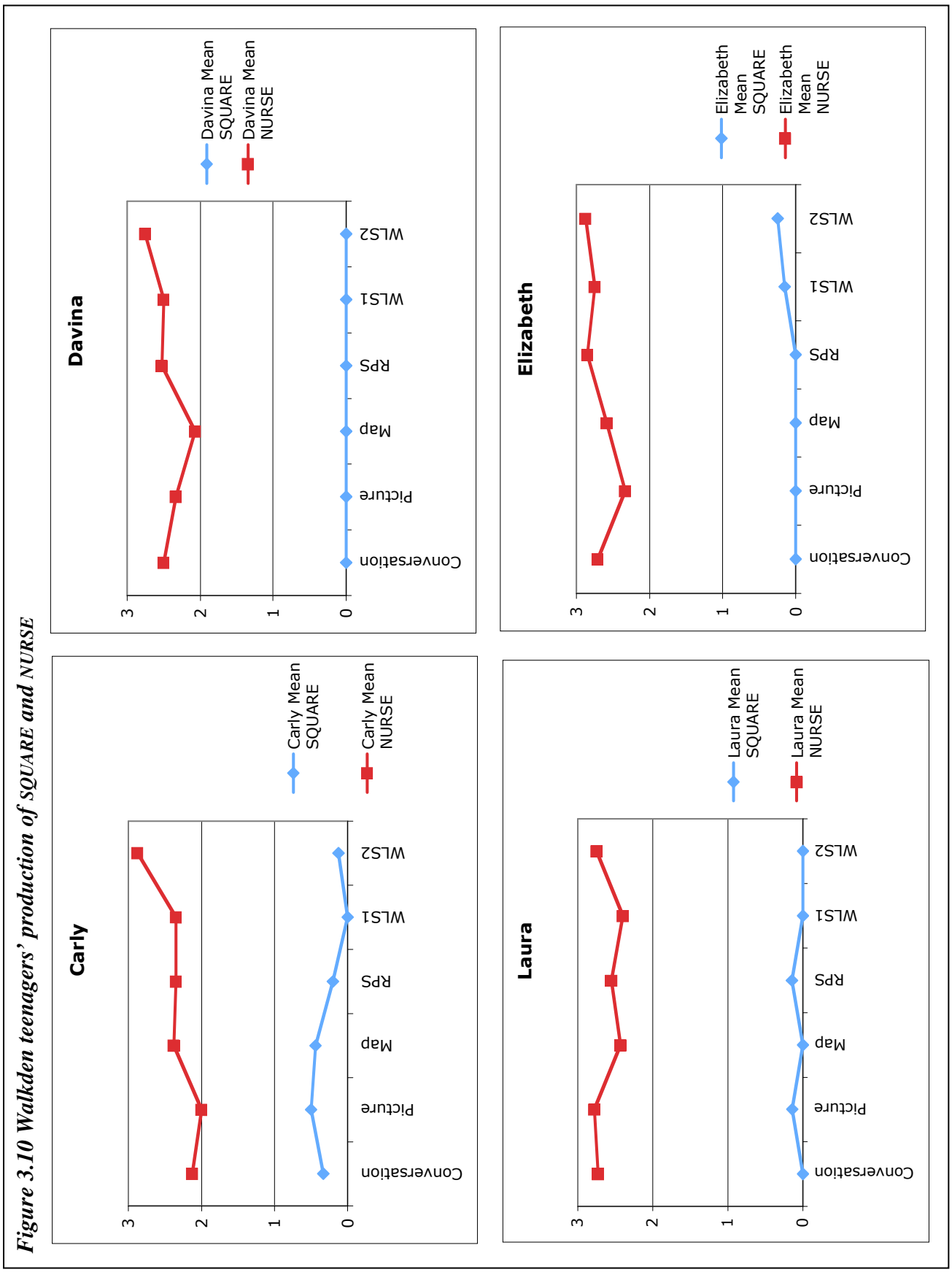


Figure 3.10 Walkden teenagers' production of SQUARE and NURSE

4 Analysis of geographical variation

4.1 Bolton, Salford and Walkden

Walkden and its immediate neighbour Little Hulton could be considered to be on the border between urban inner Salford/Manchester and Bolton. Shorrocks writes that residents of Walkden and Little Hulton are "strongly influenced by Bolton" (1998: 21) in terms of their social and cultural reference points. He goes on to link this to their use of language.

> Traditionally the speech of these areas is at one with that of Farnworth and Bolton, and not with that of Salford or Manchester, to which they are quite near. Some overspill of population from Salford – which has a very different dialect – into Little Hulton may eventually have an effect on the speech of the latter area, but I cannot distinguish its base dialect in any significant way from that of Farnworth, Kearsley or Bolton." (Shorrocks 1998:23-4)

This suggests that Walkden is geographically close to two areas with different dialects, and that when Shorrocks was carrying out his fieldwork in the 1970s and early 1980s, Bolton was the key influence on the speech of Walkden. It also suggests that the spread of Salford's population may have an effect on the speech of Walkden. With these points in mind, this section compares the pattern of SQUARE/NURSE merger or contrast for my Walkden speakers with the equivalent patterns found in my Bolton and inner-Salford speakers, to see whether Shorrocks' description still holds, or whether his prediction of population movement from Salford has had an effect on the dialect. Shorrocks does not explicitly mention the SQUARE/NURSE merger when he mentions the speech of Walkden. However, the presence or absence of this merger would constitute a significant difference between two dialects, and so the SQUARE/NURSE merger could be used to test Shorrocks' statement about Walkden.

4.2 Age-based variation: an indicator of a change in geographical variation?

The presentation of my results for speakers' production in each area revealed a good deal of individual variation in Bolton and Walkden. Because of this, rather than comparing an individual younger speaker with an individual older speaker, I intend to compare younger and older speakers in terms of the range of patterns of production in each area. This becomes clearer if the production graphs for each speaker in each cell of the sample are arranged on a single page (Figure 4.1): although the individual

graphs are quite small, this allows the lines for SQUARE and NURSE on each graph to be compared across speakers.

Figure 4.1 reveals an interesting pattern. There are some similarities between Bolton pensioners and Bolton teenagers: Freya's production resembles that of Lucy and Jen; Madge's graph is similar to Anne's. However, Susie's production of the two sets is not matched by any of the Bolton pensioners, but is similar to one of the Walkden pensioners, Janet, and all of the Walkden teenagers. The pattern for Walkden teenagers, with all four of them having a contrast in production between SQUARE and NURSE across all speech styles, is similar to the pattern for Salford pensioners, all four of whom have such a contrast in production. One interpretation of these comparisons is that, using an apparent time hypothesis, the boundary between speakers with a SQUARE/NURSE merger and speakers with a contrast between SQUARE and NURSE has moved. When the pensioners were acquiring the language, this isogloss was in Walkden; when the teenagers were acquiring the language, the boundary was in Bolton itself. Young Walkden speakers now have an apparently consistent contrast between SQUARE and NURSE, which reflects the traditional situation in Salford. Indeed, a real time comparison could be made by using my data and Shorrocks' earlier data to plot dialect boundaries on a map, although the small sample size of my data and the fact that it is restricted to working class females would need to be kept in mind. The isoglosses on such a map too would suggest a movement of the dialect boundary, at least in terms of a SQUARE/NURSE contrast, so that Walkden now belonged to the Salford dialect area rather than the Bolton area as Shorrocks found to be the case when he carried out his fieldwork. This explanation, which uses the idea of an isogloss which has moved, is one possible explanation of the patterns in Figure 4.1. However, while this seems convincing in a comparison of Salford pensioners and Walkden teenagers, it does not explain why such a movement might have taken place. Section 4.3 will attempt to show how a more sophisticated treatment of dialect geography could suggest such an explanation. Furthermore, the model of an isogloss does not convincingly account for the variation within some cells of the sample. This will be discussed further in Sections 6.3 to 6.4.

Pattern A. Some speakers show very similar productions of SQUARE and NURSE. Others show a consistent contrast between SQUARE and NURSE. Others lie in between these two patterns, showing variable productions of SQUARE and NURSE in different speech styles.

Pattern B. Consistent contrast in production of SQUARE and NURSE.

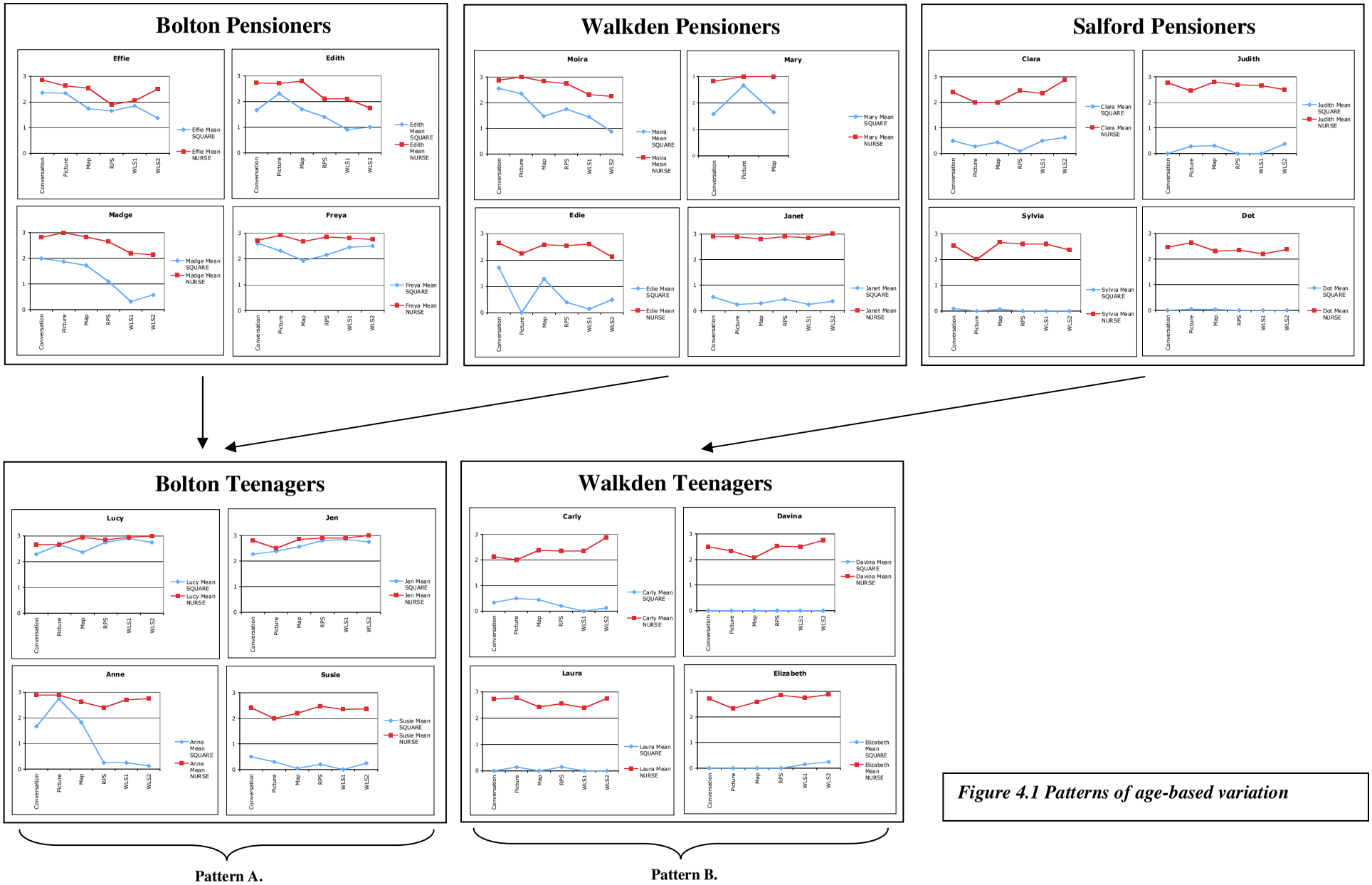


Figure 4.1 Patterns of age-based variation

4.3 *Spatiality* as an influence on speakers

Britain comments on the treatment of space in traditional dialectology, which "treated space as little more than a container, a background setting against which dialectal findings could be mapped" (2002: 606). He argues that space should be considered not only as a Euclidian geometric concept, but also in terms of social space that is shaped by human agency, and perceived space in the minds of inhabitants of an area. These three concepts together form *spatiality*, which "helps construct functional zones, and in a very real sense, communities of practice" (2002: 612). So, it could be the case that spatiality affects Walkden teenage girls: they see themselves as having a Salford rather than a Bolton identity. Socially constructed space, such as where these Walkden teenagers go shopping, or the public transport links at their disposal, may help in the construction of their identities. Indeed, Shorrocks discusses a similar idea in his discussion of "The Cultural Unit" (1998: 25) of the outlying areas in his Bolton survey, and how it is shaped in part by transport and access to services and leisure activities. He remembers from his own childhood in Farnworth "weekly shopping expeditions to Bolton on Saturdays" (1998: 24).

Britain presents data from a dialect survey in the Fens that show a number of dialect boundaries in between the towns of Wisbech and King's Lynn. He shows how these linguistic boundaries relate to a mixture of spatial factors: physical geometric distance, local rivalries and negative stereotyping and "the routinized geographies of everyday interactions and behaviours which residents in the intervening areas have mapped out for themselves, given these spatiality constraints" (Britain 2002: 612). One especially compelling set of constraints is the frequency of bus services: Britain shows how these match the linguistic boundary in terms of orientation to Wisbech or King's Lynn speech (2002: 615). The idea that speakers create their own geographies could relate to my Walkden data. While, as Shorrocks predicts (1998: 24), changes in the speech of Walkden residents could be the result of migration of speakers from urban Salford, there could also be a (possibly related) change in the perceived space of Walkden residents. The Walkden teenage girls I interviewed said that at weekends they were much more likely to go to Manchester city centre than to Bolton. They may see themselves as belonging to Salford/Manchester rather than Bolton, and this change in perception may be as significant as more physical changes such as the spread of (sub)urban Salford, or the provision of transport links.

4.4 Geographical diffusion and dialect levelling

Kerswill (2003) discusses two models that could be used to explain the loss of localised features and their replacement with features found over a much wider region. One model, geographical diffusion of features from a culturally dominant city or town with a large population to nearby settlements that are in some way subordinate to the main city, is supported by Britain's (2002) arguments outlined above. Another model is levelling, which can imply a reduction in "marked variants", which refers to forms that are "unusual or in a minority" (Trudgill 1986: 98, quoted in Kerswill 2003: 223). Applying these two ideas to the situation in Greater Manchester, we might expect linguistic features to spread from urban Manchester/Salford to the suburban towns of Greater Manchester. Given that merged SQUARE and NURSE pronunciations are "unusual or in a minority" in Greater Manchester as a whole, we might expect these pronunciations to become reduced, and to be replaced with the supra-local SQUARE/NURSE contrast.

Supporting evidence for this idea is found in the writing of several linguists carrying out fieldwork in different locations: Kerswill mentions "the avoidance of forms which are negatively evaluated as highly local in favour of forms with a wider geographical currency" (2003: 224). Foulkes and Docherty mention speakers "avoiding variants which they perceive to be particularly indicative of their local roots, while at the same time adopting some features which are perceived to be non-local" (1999: 14). Watt uses a relevant quotation in the title of an article: "I don't speak with a Geordie accent, I speak, like, the Northern accent" (2002). However, it is not clear that Bolton speakers currently fit this idea. Merged production and perception of the SQUARE/NURSE sets are still present in the speech of some Bolton teenagers, despite the close proximity of Manchester varieties with a contrast in production and perception. There is much evidence that Bolton residents do not view their local identity negatively. Moore mentions that the town has been "able to retain the social and political independence obtained during its prosperity in the late nineteenth and early twentieth century" (2003: 31). Freeman, Rogers and Kinvig state that textile towns such as Bolton "all have a strongly independent corporate life and a robust local patriotism which admits no subordination to Manchester" (1966: 218-219, quoted in Shorrocks 1998: 22-23). Although to some extent there is a tension between being simultaneously residents of a supra-local Manchester and a local Bolton, with both identities having some prestige in some contexts, there seems to be

a stronger identity with Bolton than the wider concept of Greater Manchester. It could, therefore, be the case that the maintenance of a SQUARE/NURSE merger points towards the opposite of dialect levelling, which "few researchers have been able to demonstrate" (Kerswill 2003: 239). However, given that only two of my Bolton speakers, Madge and Anne, seemed to show much variation in their production of SQUARE and NURSE across speech styles, it may be that this feature is not salient and most Bolton speakers do not regard it as indicating a particularly local identity.

4.5 Does variation across speech styles reflect perceived identity?

Sociolinguistic variables that vary with the style of speech are labelled *markers*; those that are not involved in stylistic variation are labelled *indicators* (see Chambers and Trudgill 1998: 70-72). Most of my informants, whether teenagers or pensioners, and whether from Bolton, Walkden or Salford, did not vary their production of SQUARE or NURSE words across the different parts of the interview. Greater Manchester variation in SQUARE seems, therefore, to be an indicator (perhaps of geographical identity rather than social class) and not a salient marker. However, a minority of speakers do vary their production of SQUARE and NURSE across speech styles. As suggested in Section 3.4, it could be that a speaker such as Anne has access to two different phonological systems: one with an apparently merged SQUARE/NURSE vowel, and one with a clear contrast. This situation is found in Belfast, where "the vernacular coexists with the standard dialect, and speakers have access to both codes" (Gordon 2002: 247). Shorrocks accepts such a situation, and indeed uses it to structure his description of Bolton phonology: each description of a phoneme has a section describing modification of the phoneme in careful speech styles. He writes: "speech modification and the co-existence of different phonemic systems are factors that account for linguistic variation" (Shorrocks 1998: 158). Given the consistent contrast I found in the speech of Walkden teenagers, it could be that this contrast has some social significance, perhaps marking a Salford identity or a more general urban Manchester identity, as opposed to a Bolton identity. Perhaps the Walkden teenagers wanted to identify with Salford/Manchester, but Anne, in the non-reading styles, wanted to signal her identity as a Boltonian as opposed to being a speaker of a supra-local Salford/Manchester variety with a clear contrast. Another possibility, given that the conversation and picture and map tasks were carried out in pairs, is that Anne could have been accommodating to the speech of her friend. However, Anne was interviewed with Susie, who seemed to be producing a contrast in the non-reading

styles (Figure 3.8), so this idea of accommodation due to the immediate context of the interview is not especially convincing. However, Kerswill points out that accommodation may be to images or stereotypes "not actually represented in the immediate context" (2002: 680), and mentions Coupland's 1984 study of speech accommodation by a travel agent. The travel agent is "not attempting to reproduce the actual levels of standardness for particular variables that she detects in the speech of her interlocutors; rather she is attempting to convey via her pronunciation and presumably other behaviours, verbal and non-verbal, a persona which is similar to that conveyed by her interlocutors" (Coupland 1984: 65, quoted in Kerswill 2002: 681). Given that I had told Anne and Susie that they were being recorded because they were native Bolton speakers, it may be that Anne was trying to project a stereotypically Bolton persona, and was using her pronunciation of SQUARE and NURSE to do this. Eckert's analysis of style variation may be used to support this idea.

Eckert (2000) discusses the links between variation in linguistic style and social meaning. She explains that she is not the first person to argue that style variation is not just a reaction to other speakers present in face-to-face discourse: "Coupland has long viewed style as involving the active construction of a persona through the use of a range of dialectal resources" (Eckert 2000: 214). She describes the conscious adoption of style in fields such as the clothing worn by Californian high school girls, and claims that aspects of linguistic style work the same way: "people adopt lexical items, expressions, intonation patterns and pronunciations, at least of particular words, in a quite conscious construction of style" (2000: 214). There is a caveat in Eckert's statement, showing that this conscious adoption may be limited to particular pronunciations of particular words. However, it is possible that Anne's variation in pronunciation of the SQUARE lexical set across speech styles was an attempt to signal a particular persona. She was a very helpful informant, and this was made evident in her responses to my prompts and questions in the conversation section of the interview. I asked what there was to do in Bolton, and had expected to get similar responses to those elicited from Jen and Lucy, who said there was nothing to do and it was "dead boring": they were clearly thinking about their own experiences. By this I do not mean that they were unhelpful informants: far from it, they were both very willing to talk freely and to complete the tasks I gave them. However, Anne seemed to have a more conscious awareness of what I might want to hear. When I asked Anne about what there is to do in Bolton, she gave me a

description of the architecture of the town hall, and other answers which could have come from a tourist information leaflet: she seemed to be thinking about me as an older interviewer and what I might be interested in. With this in mind, given that my questions were about Bolton, and that I had told all my informants that I was interested in the local area, including the way people speak in Bolton, it is possible that Anne tried to be helpful by speaking in a particularly Boltonian manner. Anne's pronunciation of SQUARE words in the non-reading tasks, especially in the picture task certainly fits with traditional descriptions of Bolton speech. As the interview progressed, and reading tasks were introduced, Anne may still have been trying to be a helpful informant, but this wish may have been shown by her use of a "posh" or "correct" reading voice: the interviews were, after all, carried out in school classrooms, and tasks involving reading aloud "correctly" to the satisfaction of a teacher would very probably have been familiar to Anne.

4.6 Interim conclusions concerning geographically motivated phonological variation

The SQUARE/NURSE merger certainly seems to be present in terms of production and perception for some Bolton teenagers and pensioners. Even where speakers such as Susie seem to be producing a SQUARE/NURSE contrast, they are unable to perceive a contrast, and this could suggest that the merger is phonologically real in terms of these informants' perception. In contrast, two of the three Salford pensioners who completed the commutation test were able to perceive a contrast, and all of the Salford pensioners seemed to be producing a contrast. The situation in Walkden is interesting, because it seems to have changed since Shorrocks completed his fieldwork. The pensioners here have a mixed set of results: Moira has a similar pattern of production and perception to Madge from my sample of Bolton pensioners; Janet has a similar pattern of production and perception to Dot from my sample of Salford pensioners. The Walkden teenagers, however, could all perceive a contrast and all produced a contrast. Shorrocks writes that: "I cannot distinguish [Walkden's] base dialect in any significant way from that of Farnworth, Kearsley or Bolton" (1998: 23-4). It seems that, at least in terms of SQUARE and NURSE, there now is a significant difference between the speech of Bolton and Walkden teenagers. Shorrocks' prediction that any change would be due to the increased influence of Salford seems to be supported by the fact that the Walkden teenagers now match the

pattern shown by most of my Salford pensioners of producing a SQUARE/NURSE contrast and being able to perceive the contrast.

In my sample of Bolton pensioners and teenagers, only one, Anne, could reliably perceive a contrast, and her patterns of production suggested that she may have access to two phonological systems, one with a SQUARE/NURSE merger and one with a contrast. If there has been a change in the speech of some Walkden residents since Shorrocks carried out his fieldwork, it may be the case that in the future, the influence of Salford will spread more widely in Bolton. The extent to which this could happen would be determined by factors such as "contact between speakers and social-psychological factors arising from that contact" (Kerswill 2003: 240). Given that the efforts to stress a supra-local Manchester identity in the 1990s do not yet seem to have had much of an impact in Bolton, it would be necessary to carry out fieldwork several years into the future in order to see whether Bolton will eventually follow the change that my data seem to indicate for Walkden.

5 Word frequency as a factor in phonological variation and change

Sections 3 and 4 presented and then discussed the production and perception data for each speaker in my three geographical areas. This was an attempt to show whether speakers had a single phoneme or two contrasting phonemes in the SQUARE and NURSE sets. In turn this information was used to suggest that there might have been a phonological change for speakers in Walkden, and that this change could be spreading to Bolton. However, in addition to being able to be analysed using mean index values for the SQUARE and NURSE sets, my raw data (see Appendix 6) can be analysed by individual word. This section investigates how useful such an approach is.

Labov discusses the Neogrammarian controversy of whether sound change is regular, affecting all instances of a given phoneme, or whether sound change can diffuse from word to word: "what is the fundamental unit of sound change? In Bloomfield's formulation, it is *phonemes* that change. The opposing view has been recast as a theory of lexical diffusion, in which it is argued that the basic unit of change is the word" (1994: 16). He shows that "there is good evidence to support both sides of the argument" (1994: 16). Bybee (2003) writes about the effect of usage in terms of word frequency as a factor affecting phonological variation and change. She finds evidence that, for instance, obstruent deletion can spread through the lexicon by diffusion, affecting high frequency words before lower frequency words, rather than being a lexically abrupt change which would affect all words with the same phonological environment at the same rate (Bybee 2003: 61-64). The examples described by Bybee are reductive changes: stop or fricative deletion, the reduction of vowels to schwa, and the deletion of schwa. She makes a convincing case that these processes are the result of the automation of linguistic production, and would therefore be expected to be more advanced in more highly practised words and phrases (Bybee 2003: 67).

The change from pronouncing SQUARE words with a central vowel to pronouncing them with a front vowel, which would be one outcome of a gain of a SQUARE/NURSE contrast for Bolton speakers, is not an example of a reductive sound change (although the reverse process, moving from a front SQUARE vowel to a central vowel, might be thought of as reductive given that schwa is a central vowel). However, Bybee mentions a model that is designed to account for the range of phonetic variation found in different tokens of the same word. This model proposes

that “the cognitive representation of a word can be made up of the set of exemplars of that word that has been experienced by the speaker/hearer” (Bybee 2003: 69). This exemplar cloud changes over time as new tokens of words are heard. This means that the range of phonetic variation of a word can change over time, and this can allow “a phonetically gradual sound change to affect different words at different rates” (Bybee 2003: 69). The acquisition of a SQUARE/NURSE contrast could be considered as phonologically abrupt: speakers either have one phonological category or two (although see Section 6.4 for another view of this). However, my data contain a range of phonetic variation, and it may be the case that changes in phonetic production of SQUARE and NURSE words are gradual, and affect different words at different rates. Certainly, Bolton speakers are likely to hear pronunciations of SQUARE words with front vowels when they talk to people from other areas of Greater Manchester or further afield. With this in mind, I decided to consider possible word frequency effects on the production of SQUARE and NURSE words by my Greater Manchester speakers.

5.1 Introducing word-frequency as a variable in my fieldwork

As mentioned in Section 2.2, when creating my reading passage and word list tasks, I included a range of words to allow me to consider spoken word frequency, using data from the COBUILD corpus. I also included two phonological contexts for the SQUARE and NURSE vowels: pre-vocalic, which would lead to the realisation of /r/ in the onset of the following syllable, and non-prevocalic, which given that I assumed most of my informants would be non-rhotic, would not lead to realisation of /r/. I was careful in the construction of my reading passage to ensure that these words were not followed by a vowel-initial word. In fact, my pilot study data for Bolton suggested that there may be some variable rhoticity in Bolton speech, and the presence of coda /r/ could well affect the realisation of the preceding vowel. However, in this survey I found rhoticity to be very sporadic even among my older Bolton speakers, and as I could not control for its presence, I decided to put it aside in this discussion, but note that it may be worth returning to in future. My selection of words is shown below.

Non-prevocalic /r/	COBUILD Spoken Frequency per million
world	713
personal	129
girl	123
further	86
earth	62
circle (N)	40
nerve	6
curl (V)	1
merger	0
perch	0

Figure 5.1 NURSE words, non-prevocalic /r/

Prevocalic /r/	COBUILD Spoken Frequency per million
occurring	6
stirring	5
blurring	4
whirring	2
deterring	2
stirrer	1
furry	0
slurring	0
purring	0
transferable	0

Figure 5.2 NURSE words, prevocalic /r/

Non-prevocalic /r/	COBUILD Spoken Frequency per million
there	4509
where	766
air (N)	79
fair (N)	16
compare	10
dare (V)	4
bear (N)	3
hare (N)	2
swear	2
pear	1

Figure 5.3 SQUARE words, non-prevocalic /r/

Prevocalic /r/	COBUILD Spoken Frequency per million
area	305
various	186
parents	174
whereas	133
Mary	37
wearing (V)	26
dairy	5
hairy	0
blaring	0
bearings	0

Figure 5.4 SQUARE words, prevocalic /r/

For each category of words given in figures 5.1 to 5.4 above, I tried to select five high frequency words and five low frequency words. The question of what constitutes "high" and "low" frequency is a moot point. In her study of /t/ and /d/ deletion, Bybee used a cut-off point of 35 tokens per million: this figure was chosen because she was also investigating a possible frequency effect for *t/d* deletion in regular past tense

verbs, and 35 per million is the median frequency for these forms in one study of word frequencies (Bybee 2003: 62) In her discussion of Labov's analysis of frequency effects in vowel shifts, Bybee comments that "all of the words used occurred three or more times in the interview and must therefore be considered to be of high-frequency" (Bybee 2003: 65): clearly if words occurred three or more times in an interview, then scaling this up to get a frequency per million words would result in a high number. To get a range of word-frequencies in my reading passage and word list, I decided to select words from the top and bottom of the lists of SQUARE and NURSE words generated by the WebCelex website which were ranked by spoken frequency per million. Low frequency words were usually those with frequencies of less than 10 per million, high frequency words had frequencies above 10 per million. This was not always possible though. Figure 5.2, for instance, shows that my wish to include word-internal prevocalic /r/ for NURSE words constrained the range of spoken word frequencies available in the COBUILD data: all these words were fairly low frequency. I decided to use these anyway, given that I would be using these words in the word list as well as the reading passage, so if I wanted to elicit word list tokens with prevocalic /r/, I would have to use words with word-internal prevocalic /r/.

5.2 Analysing the variation of SQUARE and NURSE with word-frequency

As was seen in Section 3, there is variation in the phonological systems found in informants from the same location. This was especially notable in the data for Bolton teenagers. Therefore, I decided to keep individual speakers' data separate in my analysis of word-frequency effects. I took two speakers from each cell of my sample, and where possible, selected speakers who showed different patterns in their production of SQUARE and NURSE. From the Bolton teenagers I selected Jen, who seems to have a merger in production and perception, and Anne who has a variable production and is able to perceive a contrast. There is less variation in my Walkden teenagers: I chose Elizabeth who has a clear and fairly consistent contrast in production, and Carly whose production of the two sets is slightly closer together in the non-reading styles. From the Bolton pensioners I chose Madge, whose production of SQUARE and NURSE is more distinct in the reading styles, and Effie, whose production of the two sets is closer together. From the Walkden pensioners I chose Janet, who has a consistent contrast in production of SQUARE and NURSE, and Moira, whose production of the two sets is more distinct in the reading styles. From the

Salford pensioners, I chose Clara and Judith who both have a fairly consistent contrast in production although Clara cannot reliably perceive a contrast. I generated graphs for each speaker for SQUARE and NURSE words in both phonological contexts: with and without prevocalic /r/.

5.3 Word frequency data

The graphs for variation of SQUARE and NURSE by word frequency referred to in Section 5.4 below are presented in Appendix 1.

5.4 Analysis

The first point to note about the word frequency data is as would be expected from the data presented in Section 3: the realisation of NURSE words is fairly uniform for all speakers in the sample. While some words tend to have a "fudged central" vowel, leading to a value of 2 on my index scale, most speakers have most NURSE words with values of 3 on the index scale. Madge and especially Effie produce some tokens of NURSE words with a fronted vowel, especially in a pre-vocalic /r/ context (see Figures 5.5 and 5.6), which is unexpected given expectations that [ɹ] might have a centralising effect on neighbouring vowels. Some speakers produce occasional NURSE words with a front vowel: see Carly's pronunciation of *deterring* (the NURSE vowel followed by a prevocalic /r/) in Figure 5.13 for instance. Given the otherwise consistently central pronunciation of NURSE words though, these may be regarded as occasional variants, or maybe even production errors: these tokens were recorded in a reading style of speech, as speakers read an unfamiliar passage of text.

The patterns evident in the data for production of SQUARE and NURSE for speakers in my sample, presented in Section 3, suggest that variation in the SQUARE set is more likely to indicate a potential merger, as those speakers who did have similar productions of SQUARE and NURSE had central pronunciations for both. However, there seems to be very little correlation between pronunciation of SQUARE words and word-frequency. Indeed, some speakers show no variation at all: Judith (a Salford pensioner) in Figure 5.10, and Elizabeth (a Walkden teenager) in Figure 5.14. Other speakers show some variation, but it does not correlate with word frequency. For example, Effie (a Bolton pensioner) in Figure 5.6, and Anne (a Bolton teenager) in Figure 5.11.

However, a very tentative suggestion of a frequency-related pattern may be made by looking at the data for the phonological context of a following prevocalic /r/,

realised as [ɹ]. In Figure 5.9 for Clara (a Salford pensioner), the only SQUARE words with [ɛ̝] rather than [ɛ] are higher frequency words. Figure 5.8 for Janet (a Walkden pensioner) and especially Figure 5.5 for Madge (a Bolton pensioner) show this slightly more consistently. As might be expected given the fact that Madge is a Bolton speaker, two of the high-frequency words, *parents* and *area* have fully central vowels, rather than just retracted front variants. However, the same pattern seems evident: what variation there is with word frequency seems restricted to those environments where a following /r/ is present, and involves the production of SQUARE words with variants that are not clearly front. In other words it seems to be promoting a movement in the direction of a merger of SQUARE and NURSE. The data for Carly (a Walkden teenager) seem to support this idea: Figure 5.13 suggests that, in the context of being followed by /r/ in the onset of the next syllable, more frequent SQUARE words may be more likely to be produced with [ɛ̝] rather than [ɛ]. However, this is based on only two tokens and so is not a particularly strong conclusion, especially since Figure 5.13 contains two tokens that suggest that in a context where /r/ is not realised, less frequent SQUARE words are more likely to have [ɛ̝] than [ɛ]. One final example is shown in Figure 5.12 for Jen (a Bolton teenager). This suggests that more frequent SQUARE words with prevocalic /r/ tend to have an advanced pronunciation: [ɜ˖] rather than [ɜ], but again only two tokens, *parents* and *area*, show this. This would seem to be moving Jen's pronunciation of SQUARE words away from her pronunciation of NURSE words, which is different from the speakers mentioned above.

With the caveat that this pattern is shown in only some speakers, and with only limited numbers of tokens for each speaker, it could be that where there is variation with word-frequency, this occurs in the phonological context of a following onset /r/, and not in contexts without /r/. In most speakers, the variation seems to be that more frequent words are typically realised with a more central vowel, typically a retracted front variant. However, given the pattern for Jen, where more frequent words are produced with variants that are *less* central, it may be that more frequent words tend to be produced with a "fudged" variant that is neither fully front nor fully central. This could explain both patterns. However, it must still be remembered that this conclusion is based on a limited number of tokens and is limited to one phonological context, that of a following onset /r/.

6 Systemic linguistic factors

In Barras (2005) an investigation of dialect data from earlier sources, particularly the SED, revealed that in much of southern Lancashire, words in both the NURSE and SQUARE lexical sets were transcribed by the fieldworkers with a central vowel, usually [ɜː] or [əː]. Words in the SQUARE and NURSE sets derived from different source sets of words in Middle English (Wells 1982: §2.2.20, §3.1.8), and in many varieties of present day English they have contrasting vowels. It was, therefore, suggested that during the development of southern Lancashire English, the sets of words could have merged and formed one set, and that this was different from the development of the two lexical sets in other varieties of English (Barras 2005: 17). Shorrocks (1998) describes a similar situation in his analysis of Bolton phonology, proposing a single phoneme so that "dialect /ɵː/ corresponds to both RP /ɜː/ and /ɛə/: for instance *fare*, *fair*, *fir* and *fur* are all pronounced /fɵː(ɹ)/ in the dialect" (Shorrocks 1998: 166). This raises the question of how straightforward it is to move from a surface level phonetic observation that the vowels in two words sound the same to an observer, which is a conclusion that can be drawn from the SED data, to a proposal that they in fact have the same underlying phoneme.

6.1 The concept of the phoneme

Shorrocks (1998:157-165) summarises various discussions and definitions of the phoneme. Following from de Saussure, one method of defining the phoneme is purely in terms of contrasts within the linguistic system: "The phonological system of a language is not so much a 'set of sounds' as it is a network of differences between sounds" (Hockett 1970: 24 quoted in Shorrocks 1998: 163). However, as Shorrocks points out, it is also possible to specify distinctive features of phonemes, which involves making use of descriptions of phonetic characteristics as well as considering phonemes as purely abstract members of a system: "in addition to stating that /p/ is not /t, k/ etc., one may proceed to state the phonetic characteristics of /p/" (Shorrocks 1998: 164). Although it is possible to define a phonological system in terms of a set of contrasts, and also to describe distinctive features, Docherty and Foulkes write that "systemic properties of speech production are determined not simply by the need to achieve lexical contrast" (2000: 111). Speakers are not only trying to convey lexical meanings successfully to their listeners, but "simultaneously using the same vocal

apparatus to signal aspects of their social identity" (2000: 111). This is worth bearing in mind, and links to the discussion of identity in Sections 4.3 and 4.5.

In analysing my SQUARE/NURSE data, I encountered a great deal of variation both between and within cells of my sample, and Shorrocks specifically mentions "the [large] number of variants included … under the phonemes /ɵ/ and /ɵː/ (1998: 165). There is some variation in /ɵː/ that is positionally defined: for instance, variants tend to be rounded after bilabials (Shorrocks 1998: 208). However, the number of examples of this type of variation is quite limited. This means that many of the variants are in parallel distribution, and could possibly be separate phonemes. To label them as allophones of one phoneme, evidence such as the absence of minimal pairs or speakers' failure of commutation tests is needed. If speakers cannot perceive a contrast then this suggests the variation is at the subphonemic, or allophonic level. However, when considering diachronic change in a given variety of English, linguists have questioned this assumption. Nunberg writes that "speaker reports of sameness cannot be taken as assurances of merger" (1980: 226). Given Nunberg's argument (discussed below in Section 6.2), it would seem that the concept of the phoneme is potentially problematic with respect to my data. If some of my speakers fail commutation tests for SQUARE/NURSE pairs, and their production of the two sets is similar (according to my auditory analysis), then common sense would suggest these speakers have a single phoneme. However, some models used to explain "impossible unmergings" (Labov 1994: Chapter 10) require that these facts still allow for the presence of two phonemes.

6.2 Reversing a merger

There are several examples of historical sound changes that seem to require a merged phoneme to have subsequently split back into two phonemes, with a corresponding separating of members of the two lexical sets involved. Nunberg (1980: 223) discusses the LINE-LOIN merger in eighteenth century English, showing that the evidence of orthoepists and phoneticians of the time strongly suggests that they thought the vowels in both sets were the same. Given that these sets did subsequently split, it poses the problem of how such a reversal is possible, especially as Nunberg claims that "all evidence seems to suggest that spelling and dialect borrowing alone are insufficient to restore a distinction once it has been lost" (1980: 225).

Nunberg goes on to argue that the concept of near-merger, which arises from twentieth century studies of apparent mergers, can be applied to the historical LINE-

LOIN merger. Various studies, as described in Labov (1994: Chapter 12) show that speakers are able to produce a consistent contrast between members of two word classes, even though they perceive them as sounding the same. This concept was highly controversial: it does seem counterintuitive that speakers can consistently produce a contrast while being unable to perceive such a contrast. Nunberg produces diagrams with ellipses representing "limits of production" and "limits of confusability" for the vowels in two given word classes (1980: 227-8). He shows how it is possible for certain phonetically conditioned allophones of each phoneme to overlap in their limits of confusability, even though other allophones may remain distinct in the perception of listeners. Furthermore, if the two vowel phonemes were moving along "oblique tracks" (1980: 230) and their allophones were distributed asymmetrically with respect to each other, this would explain why certain words, containing certain phonetic conditioning environments, were confused and their vowels apparently merged for a time, yet other words remained distinct during the time of the apparent merger. However, SQUARE and NURSE are not subject to the same phonological conditioning used in Nunberg's explanation of LINE/LOIN, and the near merger model is perhaps not convincing in explaining the variation in my data.

6.3 The FOOT/STRUT split in the Fens: mixed, fudged and scrambled lects

The FOOT/STRUT split is frequently described in literature on phonological variation: together with the BATH/TRAP split it is a key distinction between northern and southern accents of English in England. The treatment of this split is often geographical: an isogloss for the realisation of STRUT can be drawn on a map with [ʊ] to its north and [ʌ] to its south. However, I bring FOOT/STRUT into this dissertation in this section, rather than my section on geographical variation, because of its implications for the phonological structure of varieties of English found at apparent borders between different dialects. The SED shows that northern dialects with [ʊ] in STRUT meet southern dialects with [ʌ] in the Fens. However, using the SED data to draw an isogloss on the map hides the fact that some speakers in the Fens have both [ʊ] and [ʌ] in STRUT: Chambers and Trudgill label this a *mixed lect* and explain that it is "expected, perhaps even predictable" (1998: 110) in areas between those with uniform use of [ʊ] and of [ʌ]. Further examination of the SED data shows that some speakers have an intermediate variant: [ɣ]. Such speakers have a *fudged lect*. So, rather than a boundary between two dialects, there is a broad transition zone

(Chambers and Trudgill 1998: 106, Britain 2001: 223) for the realisation of STRUT. In his data, which was collected in the late 1980s, Britain does not find mixed lects. Speakers living immediately on either side of the transition zone have either fudged northern varieties with [ʊ ~ ʊ̟ ~ ɣ] or fudged southern varieties with [ʌ ~ ʌ̟ ~ ɣ], but speakers within the zone have *scrambled lects* where the intermediate form, [ɣ], occurs most frequently (see Britain 2001: 230-1).

6.3.1 Variation in SQUARE and NURSE in Greater Manchester: fudged and scrambled lects?

As was shown in Section 3, there is geographical variation in my SQUARE and NURSE data. Some Salford pensioners and all the Walkden teenagers interviewed have a system with two phonemes: SQUARE has /ɛə/ (or possibly /ɛː/ would be a better phonological label, given that the vowel is most frequently realised as a monophthong, [ɛː] in northern English varieties); NURSE has /ɜː/. This matches the situation in many varieties of English, including RP. In contrast, some of my Bolton teenagers and pensioners have a system with one phoneme, /ɜː/, in NURSE and SQUARE. However, there are speakers who have more variation in their production. This variation is not particularly evident in the NURSE vowel: it is nearly always clearly central. There are occasional instances of NURSE words being realised with a fudged front or clearly front vowel, such as Moira's pronunciation of *deterring* with [ɛː] (see Figure 5.7 in Appendix 1), but these are sporadic and may be regarded as (infrequently occurring) hypercorrect pronunciations. There is more variation in the SQUARE vowel though, with advanced central, retracted front, and clearly front variants being produced by these speakers. These speakers could be said to be in a transition zone between a local Bolton variety and a supra-local variety, whether that variety is identified with Salford, Salford/Manchester, or general northern English. However, this 'zone' is possibly defined socially as well as geographically (age is the only social variable included in my sample and so further research would be needed to determine the effect of gender or social class on this variation), and the label of geographical variation should be considered not just in terms of straightforward geometric space, but also in terms of the ideas of social space and perceived space put forward by Britain (2002). Speakers who show a lot of variation in their production of SQUARE may have fudged or scrambled lects, and this is similar to the variation in STRUT in the Fens described by Chambers and Trudgill (1998) and Britain (2001).

6.3.2 Comparing Greater Manchester SQUARE with Fenland STRUT

Britain analyses older and younger speakers in his Fenland data, and finds that there seems to be a change in the realisation of STRUT. However, "rather than the 'boundary' moving, with one form winning out over another, it appears to be sharpening, with the variable interdialectal area becoming geographically more restricted" (Britain 2001: 232). In Section 4, I used Figure 4.1 to suggest that the boundary between areas with a consistent merger and areas with a consistent SQUARE/NURSE contrast appeared to have moved, based on the fact that the results for Salford pensioners resemble those for Walkden teenagers. However, perhaps the idea of a transition zone which could sharpen and become more geographically restricted is a more convincing explanation for the pattern in Figure 4.1. For my older speakers, there appears to be a transition zone which includes both Bolton and Walkden. By considering speakers across these two areas, a range of variation is encountered from consistent merger to consistent contrast and including speakers who use fudged variants in at least some speech styles. In contrast, for younger speakers, this range of variation is found within Bolton itself: my data for Walkden teenagers show that all of my speakers there have a consistent merger.

Two connected points about Britain's model of change in the transition zone for STRUT in the Fens may be applied to SQUARE in Greater Manchester. First, Britain shows that as the transition zone for STRUT has narrowed, in some areas the FOOT/STRUT split has actually "regressed": there are "higher index scores, representing more northern [ʊ] forms, among the young than the old" (Britain 2001: 227). Secondly, Britain shows that in the interdialectal area, the fudged [ɣ] variant seems to be becoming dominant over other variants, and seems to be stabilising.

The most consistently central realisation of SQUARE in my data is that produced by Lucy and Jen, two Bolton teenagers (see Figure 3.8). Their index scores for SQUARE are higher than the Bolton pensioners I interviewed. Although my other Bolton teenagers, Anne and Susie, did not show this pattern, the scores for Lucy and Jen suggest that it is possible that some younger speakers in Bolton have more traditional Lancashire central variants in SQUARE than older Bolton speakers do.

In my analysis of word-frequency as a possible factor affecting realisations of SQUARE and NURSE, I suggested that more frequent words may tend to be produced with fudged variants (see Section 5.4). Although this conclusion was very tentative, it would fit the pattern for STRUT found by Britain in his Fenland data: that a fudged variant seems to be stabilising as the most frequently occurring realisation. In my

data, fudged variants may be the preferred realisation in the most frequently occurring words.

However, it is not necessarily the case that the transition zone model of STRUT variation in the Fens applies exactly to SQUARE variation in Greater Manchester. Wolfram and Schilling-Estes write that the transition forms are "a synchronic reflex of the diachronic progression of [ʊ] to [ʌ], - i.e. an intermediate point in phonetic space between a traditional vowel value and an innovative pronunciation" (quoted in Britain 2001: 223). In varieties with a FOOT/STRUT contrast, the STRUT set developed after a split from the FOOT set (Wells 1982: 197), and so a diachronic progression from [ʊ] to [ʌ] would be expected, which may have the synchronic reflex mentioned by Wolfram and Shilling-Estes. However, in varieties with a SQUARE/NURSE contrast, the SQUARE set did not develop after a split from the NURSE set, and so variation in SQUARE is not directly comparable to the variation in STRUT discussed above. Furthermore, Britain's discussion of a STRUT transition zone includes evidence from the SED Basic Materials, which show "considerable variability around the border" between areas with [ʊ] and areas with [ʌ] (Britain 2002: 225). My investigation of the Basic Materials for SQUARE in South Eastern Lancashire (Barras 2005: Appendix) reveals some variation, but not along the continuum from central to front: there are variants such as [ɜː ɜːˈ əː] but not [ëː] or [ɛː] even though such variants might be expected around a border between areas with [ɜː] in SQUARE and areas with [ɛː]. These points suggest that although the model of a transition zone may be useful in explaining some of my informants' pronunciations of SQUARE as fudged or scrambled, it is not an exact match for the variation in STRUT found in the Fens.

6.4 Fudged varieties: phonemes or variables?

Variation in the FOOT/STRUT split has been considered in other areas of Britain. Beal notes that there is a "modified regional standard heard from middle-class Tynesiders…One notable characteristic of this accent is a schwa-like vowel in words such as *good*, *put*, *puss*, etc., as well as *mud*, *blood*, *pus*, etc." (Beal 1999: 135). Wells also comments on STRUT in the north of England, writing that the presence of stressed [ə] in STRUT is "particularly characteristic of northern Near-RP" (1982: 352). Wells describes RP as "overtly more prestigious" (1982: 351), and talks about individual speakers "poshing-up" (1982: 353) their accents by trying to adopt a new vowel in all instances of their underlying /ʊ/. The fact that this new vowel seems to be somewhere between schwa and [ʌ] suggests that this situation may be similar to the fudged

variants found in the Fens. He presents a table of possibilities for FOOT and STRUT in the north of England.

	STRUT	FOOT	
Broad	[ʊ]	[ʊ]	One phoneme, /ʊ/
Intermediate	[ə ~ ʌ]	[ə ~ ʌ]	One phoneme; realization modified
	[ə ~ ʌ]	[ʊ]	Two phonemes; incidence may be erratic
RP	[ʌ]	[ʊ]	Two phonemes, /ʌ/ vs. /ʊ/

Figure 6.1 Variation of STRUT and FOOT in the north of England (Wells 1982: 353)

The same model could be applied to SQUARE and NURSE in my data:

	SQUARE	NURSE	
Broad	[ɜː]	[ɜː]	One phoneme, /ɜː/
Intermediate	[ɛː~ɛ̝ː~ɜˑː~ɜː]	[ɛː~ɛ̝ː~ɜˑː~ɜː]	One phoneme; variable realization
	[ɛː~ɛ̝ː~ɜˑː~ɜː]	[ɜː]	Two phonemes; incidence may be erratic
Non-local	[ɛː]	[ɜː]	Two phonemes, /ɛː/ vs. /ɜː/

Figure 6.2 Greater Manchester variation of SQUARE and NURSE

I have changed the RP label to non-local (in the sense of not having the traditional Lancashire SQUARE/NURSE merger), to reflect the fact that typically RP realisations of SQUARE with [ɛə] are rare in my data, and the non-local form of SQUARE which may carry overt prestige is likely to be a monophthong [ɛː] (see Wells 1982: 361). Applying the labels of broad, intermediate and non-local to my data would suggest that two of my Bolton teenagers, Lucy and Jen, belong in the broad category. Some of my Salford pensioners, Dot, Sylvia and perhaps Judith, together with all my Walkden teenagers would fit into the non-local category. The rest of my speakers would fit into the intermediate category, and this presents a problem in determining whether these speakers have one phoneme or two in SQUARE and NURSE. If there is some variation in both sets, as is the case for Effie, Edith and some Walkden pensioners, then it suggests these speakers have one phoneme, but a variable realisation of this SQUARE/NURSE vowel. If the variation is in SQUARE, with little variation in NURSE, it suggests they have two phonemes: Anne and perhaps Madge seem to fit this pattern. However, this model clearly allows for some overlap between realisations of SQUARE and NURSE: the same central vowel is possible for both. This perhaps matches Nunberg's description of the LINE/LOIN near merger. However, this variation is not determined by phonological context in the way that LINE/LOIN variation was in

Nunberg's analysis of orthoepists' writings, so perhaps another explanation is possible.

I have already mentioned the possibility that some speakers have access to different phonological systems, which they may use in different contexts, for instance in the different stages of my interviews (see Section 3.4). However, if speakers' variable realisation of SQUARE indicates a change in progress, it may be that this variable should be considered as a structural unit in its own right instead of trying to reconcile the wide range of variation in realisation with a single underlying phoneme, or with switching between different phonological systems. When describing the Fenland variation in STRUT, Chambers and Trudgill write that the structural linguistic difference between 'northern' speakers with 100% [ʊ] and 'southern' speakers with 0% [ʊ] is that "the latter have one vowel phoneme /ʌ/, which the former do not have. What can be said of those in the middle? Their vowel system apparently cannot be described in terms of phonemes at all, and instead we shall say that they have a variable, (u), in their vowel system…the variable is a transitional development marking the restructuring of the vowel system" (1998: 108-9). This seems analogous to the variation in SQUARE in my data: some speakers may be thought of as having a variable (are) with a range of variants [ɛː, ɐ̟ː, ɜˑː, ɜː]. In future, it may be that one of these variants becomes widely adopted, in the same way that in the Fens the fudged [ɣ] has become stabilised as the most frequent pronunciation of STRUT in Wisbech (Britain 2001: 232). Perhaps only then could we talk about such speakers having a stable phonemic contrast between SQUARE and NURSE.

7 Conclusions

The suggestions made in Sections 4.3 and 4.5 that identity and spatiality may have an effect on some speakers' variation in the SQUARE/NURSE variable seem convincing. Supporting evidence is found not only in the variation (or lack of it) in the pronunciation of SQUARE shown by the speakers in my sample, but also in the ways in which Manchester is described as a cultural concept. Marketing Manchester, a company set up in 1997 to promote Greater Manchester, included the following passage in its promotional literature:

> Manchester is more than a geographical location or a political entity: it is a state of mind. It is Manchester United [*Trafford*]…and the friendliest international airport in the world [*Cheshire/ Manchester boundary*]. The Manchester city-region is the economic and cultural focus of the North-West [*the region*] … [and] England's North Country [*cross-region*].
>
> (Marketing Manchester 1997: 1, quoted in Deas and Ward 2002: 129. Comments about the widening geographical spread of influence of Manchester are inserted in square brackets by Deas and Ward).

Given this focus on people's mental perception of the region, it seems reasonable that some speakers would want to identify with Manchester and form part of the ever widening conception of Manchester. This changing idea of what "Manchester" means connects to the idea that "place is an ongoing process" (Pred 1985: 361, quoted in Britain 2002: 616). This may well be one factor affecting the Walkden teenagers I spoke to: Walkden could be considered to have moved and become part of this inclusive idea of Manchester. However, as was discussed in Sections 1.2 and 4.1, there may well be resistance to the "state of mind" which Marketing Manchester was trying to promote. For those of my Bolton speakers who maintain a traditional Bolton merger of SQUARE and NURSE, it may be that their own self-awareness as Boltonians rather than Mancunians takes priority over the supra-local identity being promoted by groups such as Marketing Manchester which have their own economic agendas. This local loyalty may well be expressed in the act of maintaining traditionally local linguistic features, such as the SQUARE/NURSE merger, even for young Bolton speakers, such as Jen and Lucy.

One thing that is very clear from my data is that there is much variation at the level of individual speakers. I controlled many social variables, and am careful not to generalise too far from my data: I describe the language use of, for instance, teenage working class Walkden girls. However, even this restricted labelling is not sufficient

to account for the variation within each of the cells in my sample. So, while some Bolton teenage girls may well be expressing their local loyalty partly though their realisation of SQUARE with a central vowel, others have more variation in their realisation of SQUARE, and while this could reflect a different emphasis in their social and cultural identities, it could be a reflection of wider variability in the phonologies of speakers found in the Greater Manchester area. The models of fudged or scrambled lects, together with the idea of a transition zone, as applied to STRUT in the Fens, may well be useful for SQUARE in Greater Manchester. There certainly is a geographic element in the variable realisation of SQUARE: in my sample, variation is more common in Bolton than in Salford, where SQUARE is more consistently realised with a front vowel. However, there are also age differences, as revealed by my data for Walkden pensioners and teenagers, and a broader sample may well reveal gender or class differences.

When discussing another phonemic split, the BATH/TRAP split in the Fens, Britain describes a great deal of individual variation which "seems to pervade even tight-knit family groups, demonstrating that individuals appear to follow their own individual paths along the change from [a] to [aː]" (Britain 2001: 238). My data form a snapshot of the situation for some speakers in 2006 and the use of fudged variants by some of my speakers may reflect the present unstable nature of the vowel system in Greater Manchester. Chambers and Trudgill suggest that the intermediate variant of STRUT, [ɣ], is "a fudge between the contending phone types of this change in progress, a way, as it were of being at neither pole on the continuum or conversely of being at both poles at once" (1998: 110). By analogy, this would suggest that fudged variants of SQUARE could be considered as a way of having both a traditional Lancashire pronunciation and an urban supra-local Manchester pronunciation, which would fit the duality of identity felt in many towns within Greater Manchester. The level of individual variation could suggest that, as with BATH in the Fens, individuals are following their own individual paths through a change in SQUARE.

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Appendix 1

SQUARE/NURSE Variation by Word Frequency

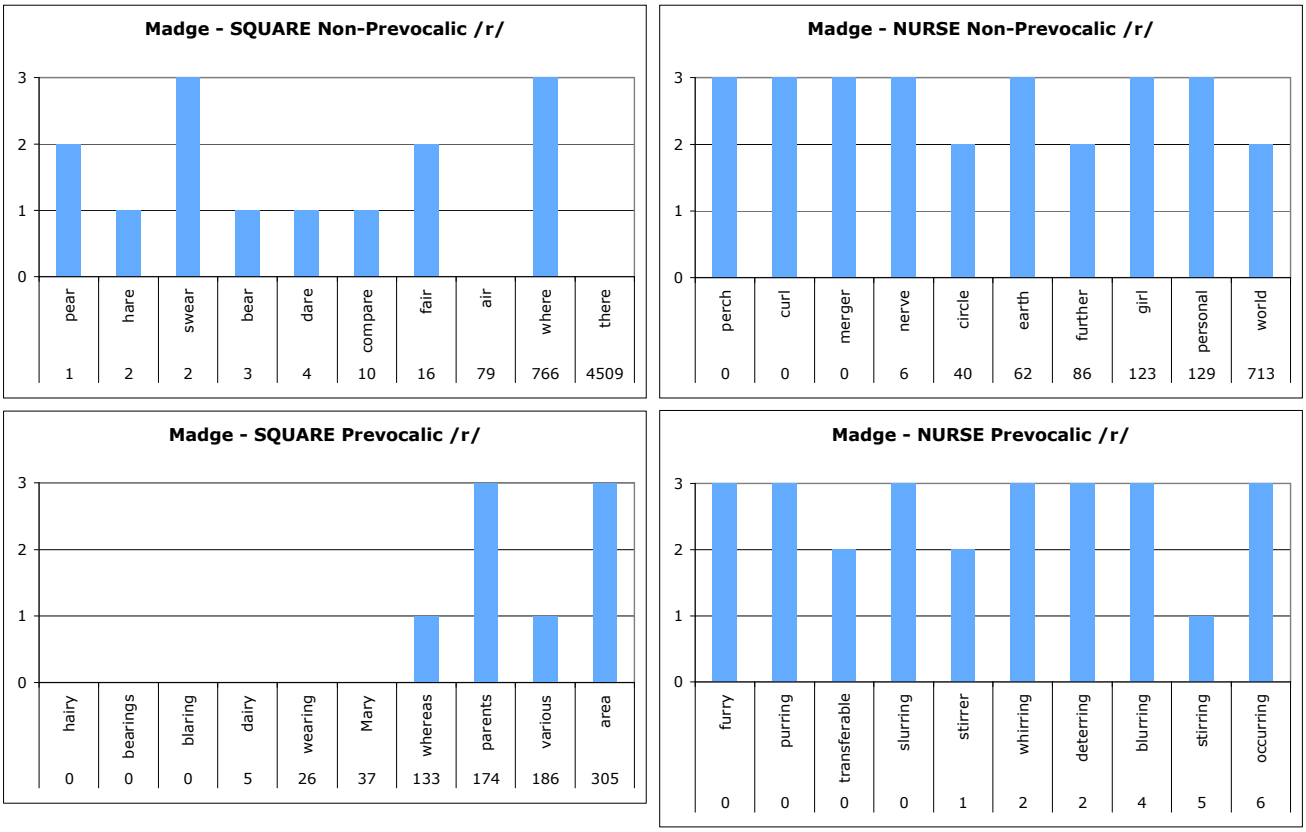


Figure 5.5 SQUARE/NURSE by word frequency for Madge (a Bolton pensioner)

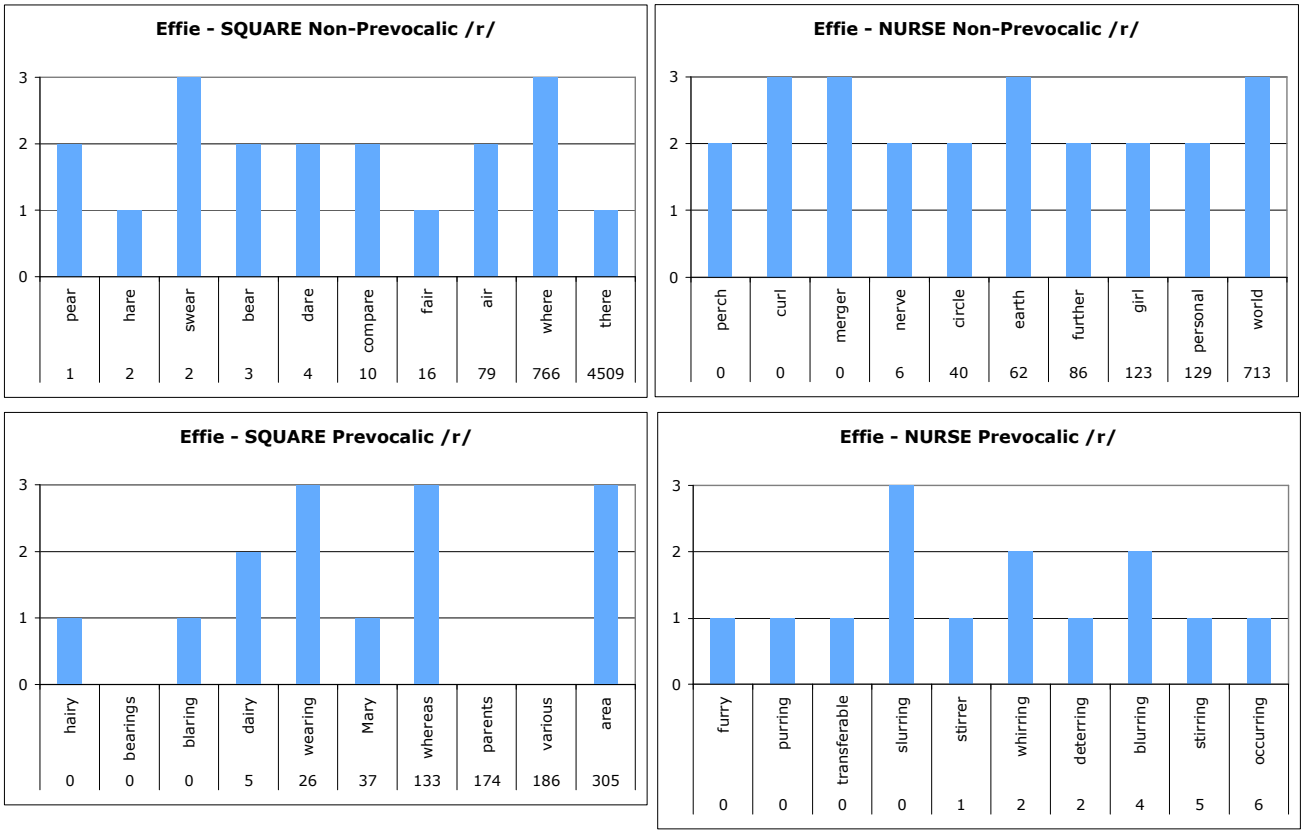


Figure 5.6 SQUARE/NURSE by word frequency for Effie (a Bolton pensioner)

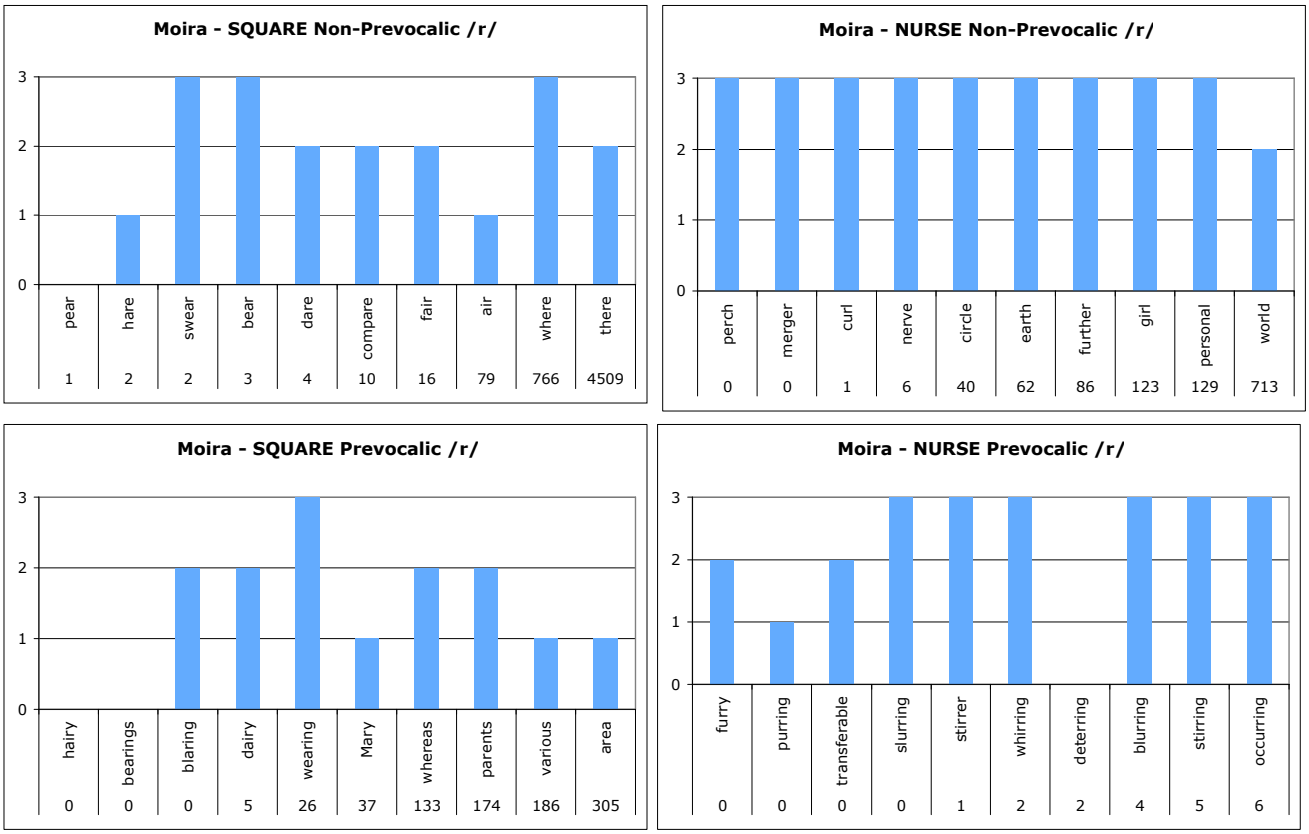


Figure 5.7 SQUARE/NURSE by word frequency for Moira (a Walkden pensioner)

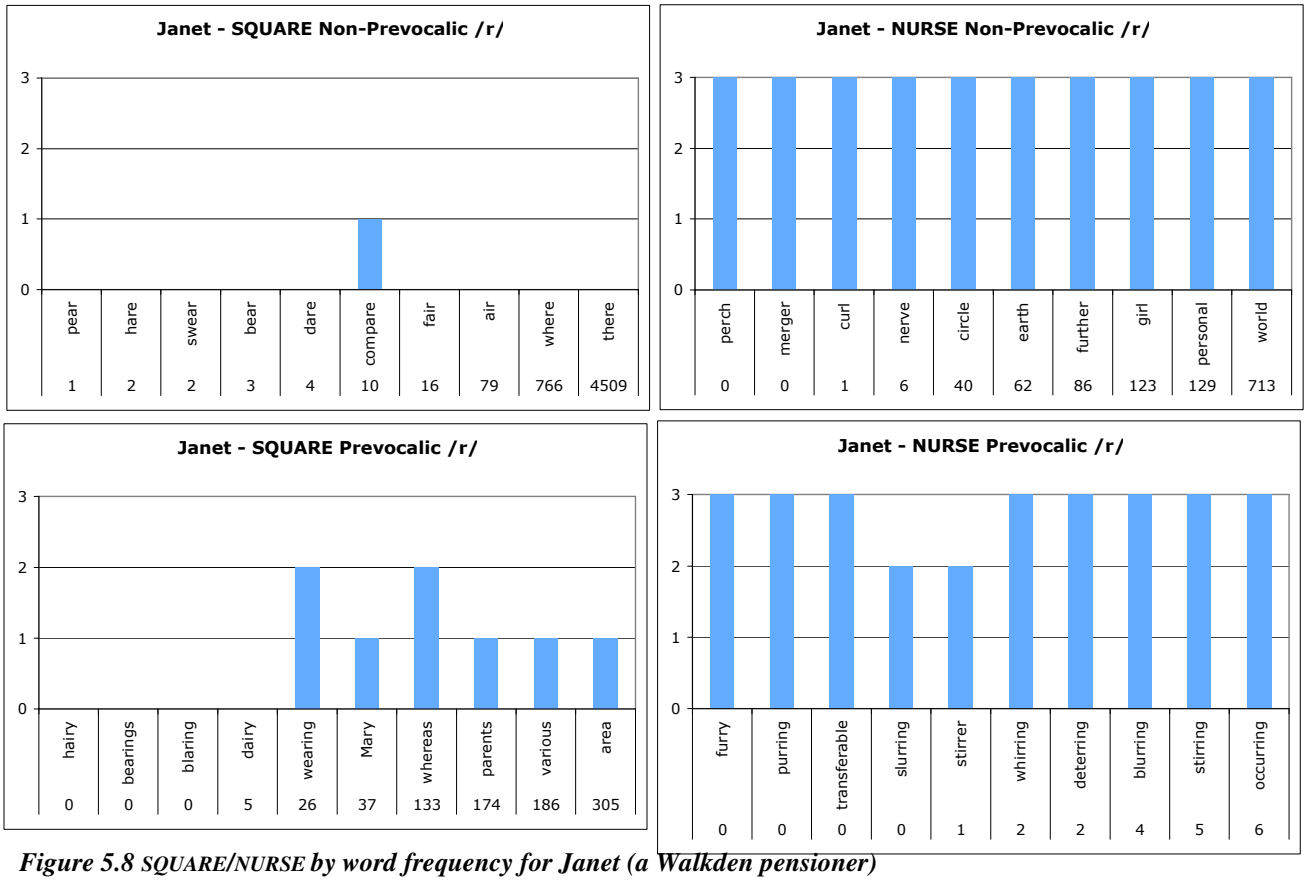
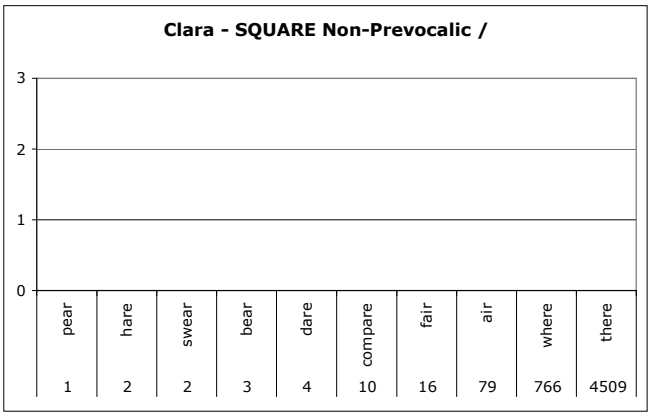
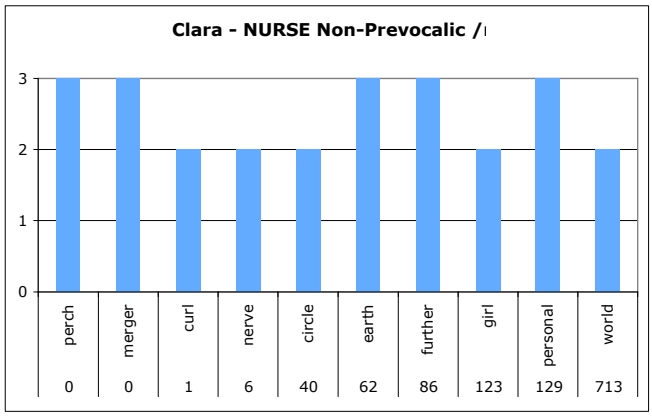
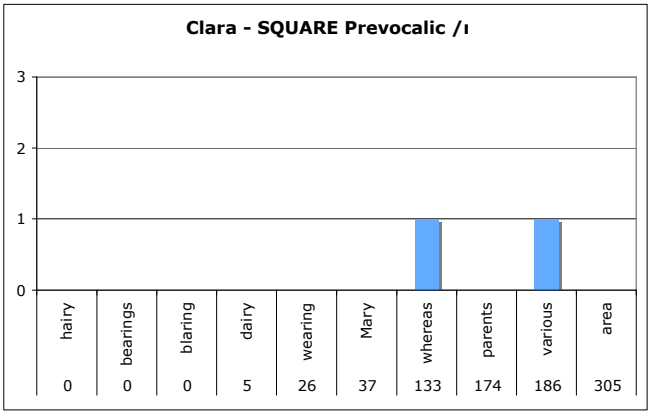


Figure 5.8 SQUARE/NURSE by word frequency for Janet (a Walkden pensioner)







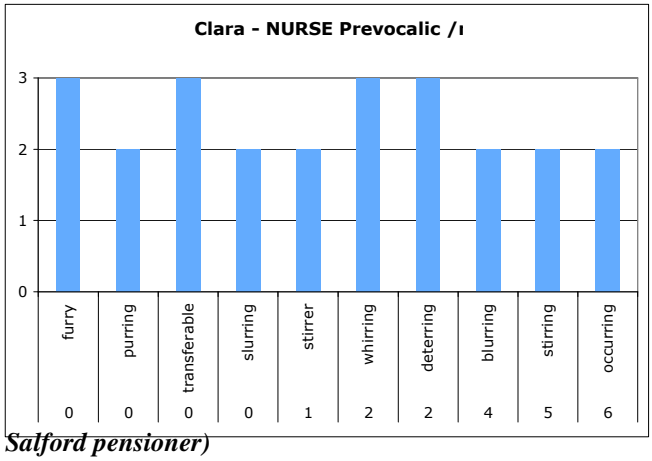
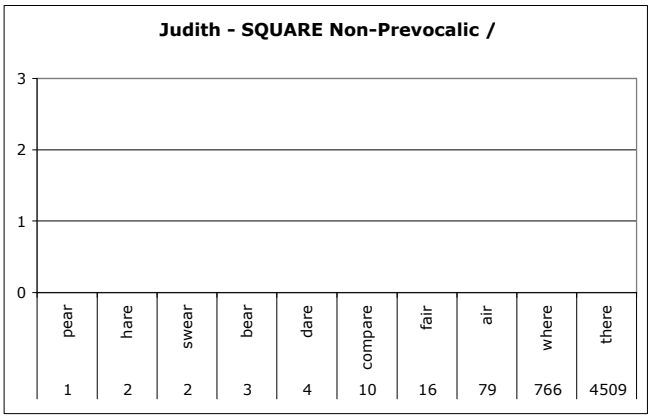
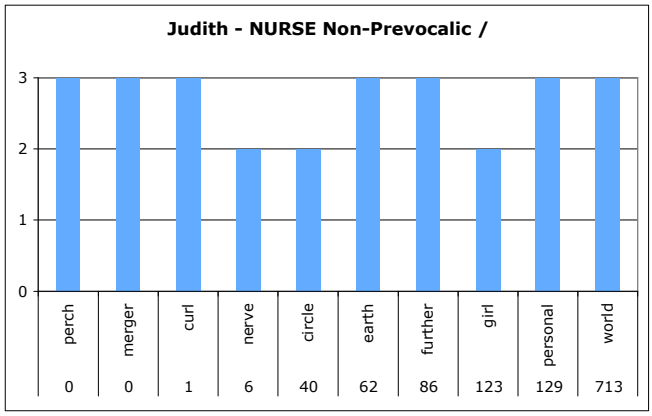
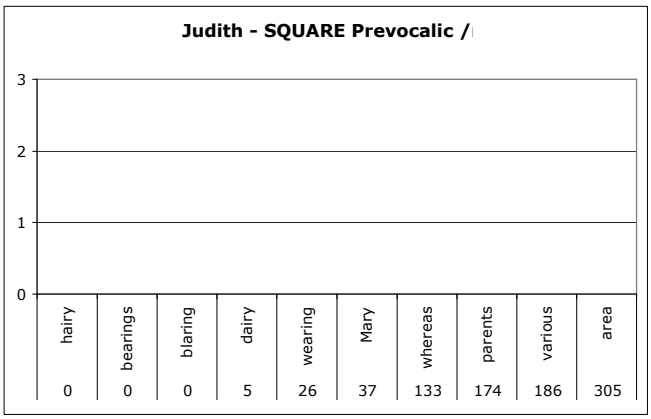


Figure 5.9 SQUARE/NURSE by word frequency for Clara (a Salford pensioner)







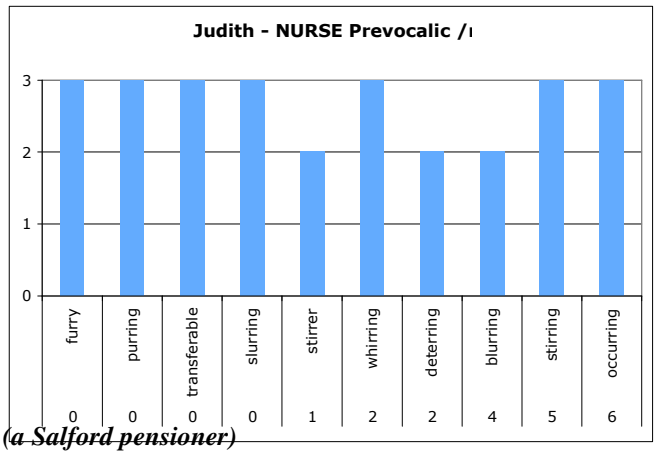


Figure 5.10 SQUARE/NURSE by word frequency for Judith (a Salford pensioner)

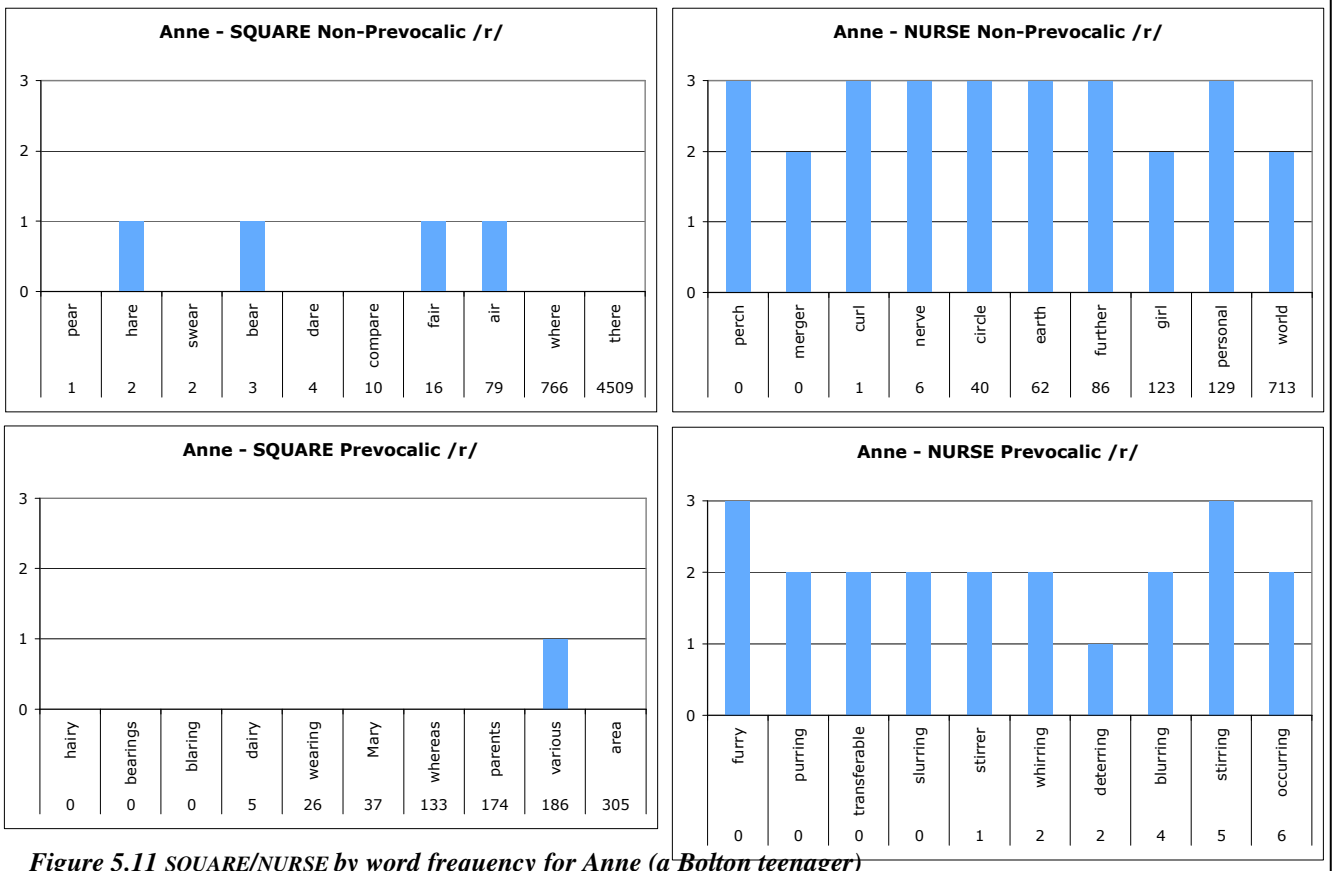


Figure 5.11 SQUARE/NURSE by word frequency for Anne (a Bolton teenager)

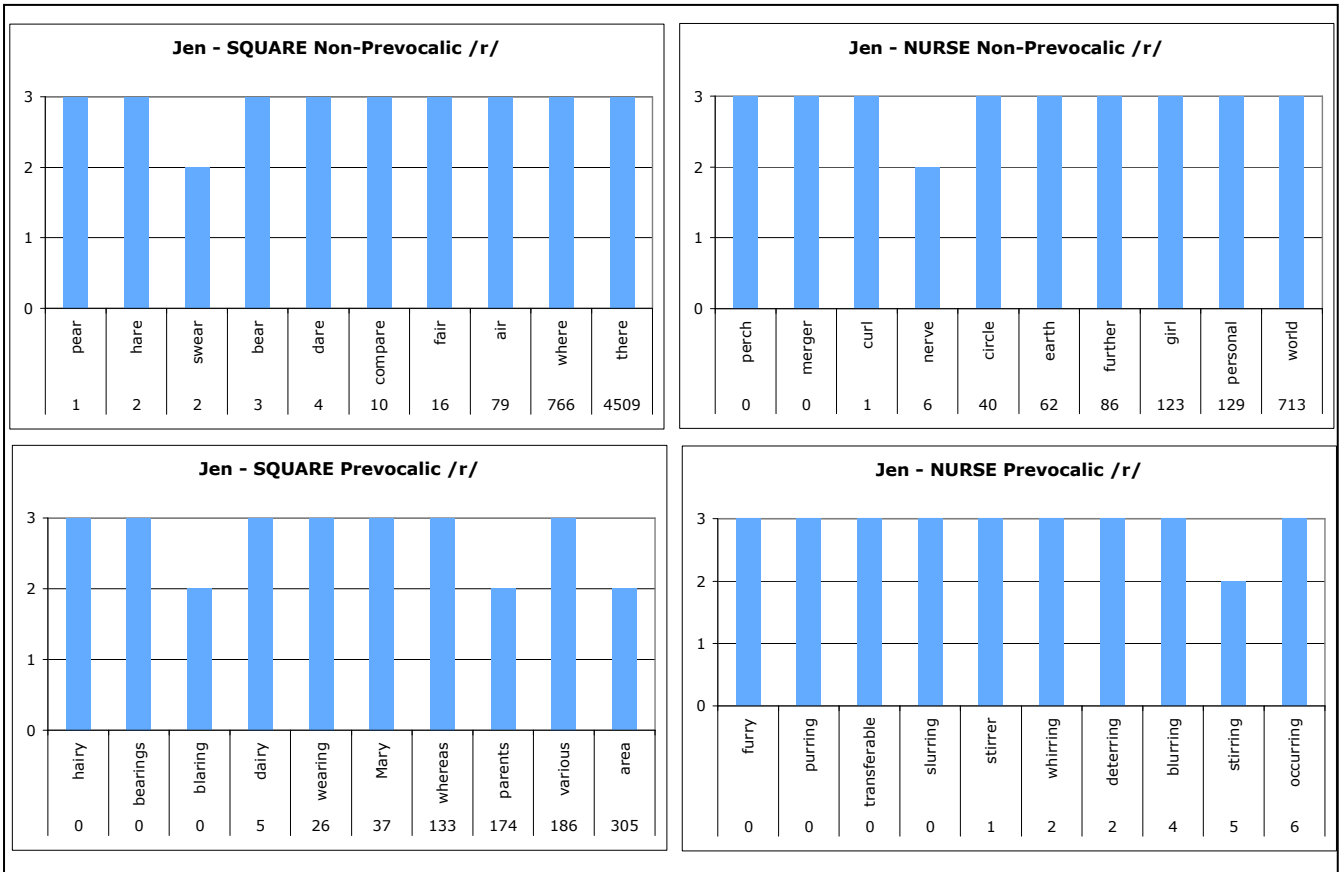


Figure 5.12 SQUARE/NURSE by word frequency for Jen (a Bolton teenager)

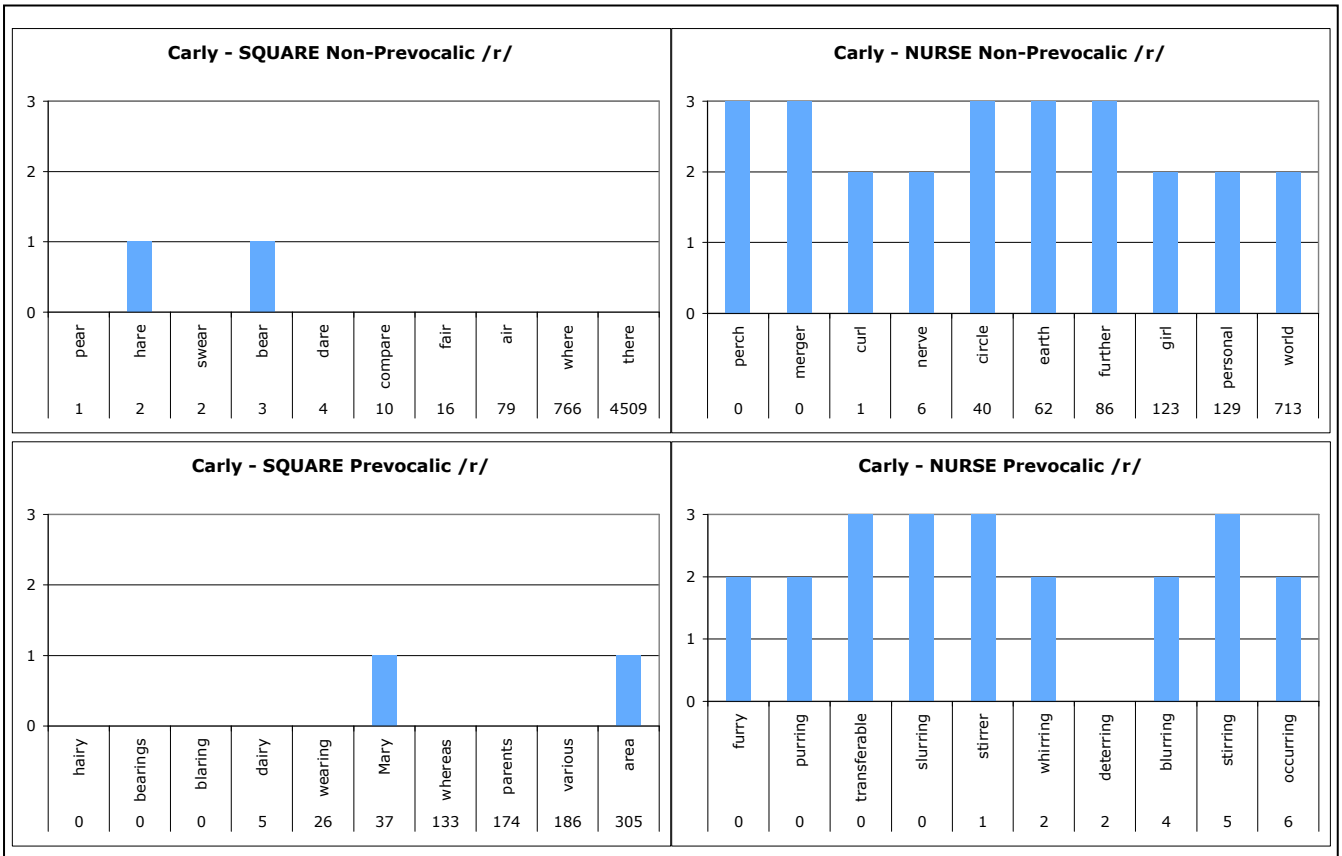


Figure 5.13 SQUARE/NURSE by word frequency for Carly (a Walkden teenager)

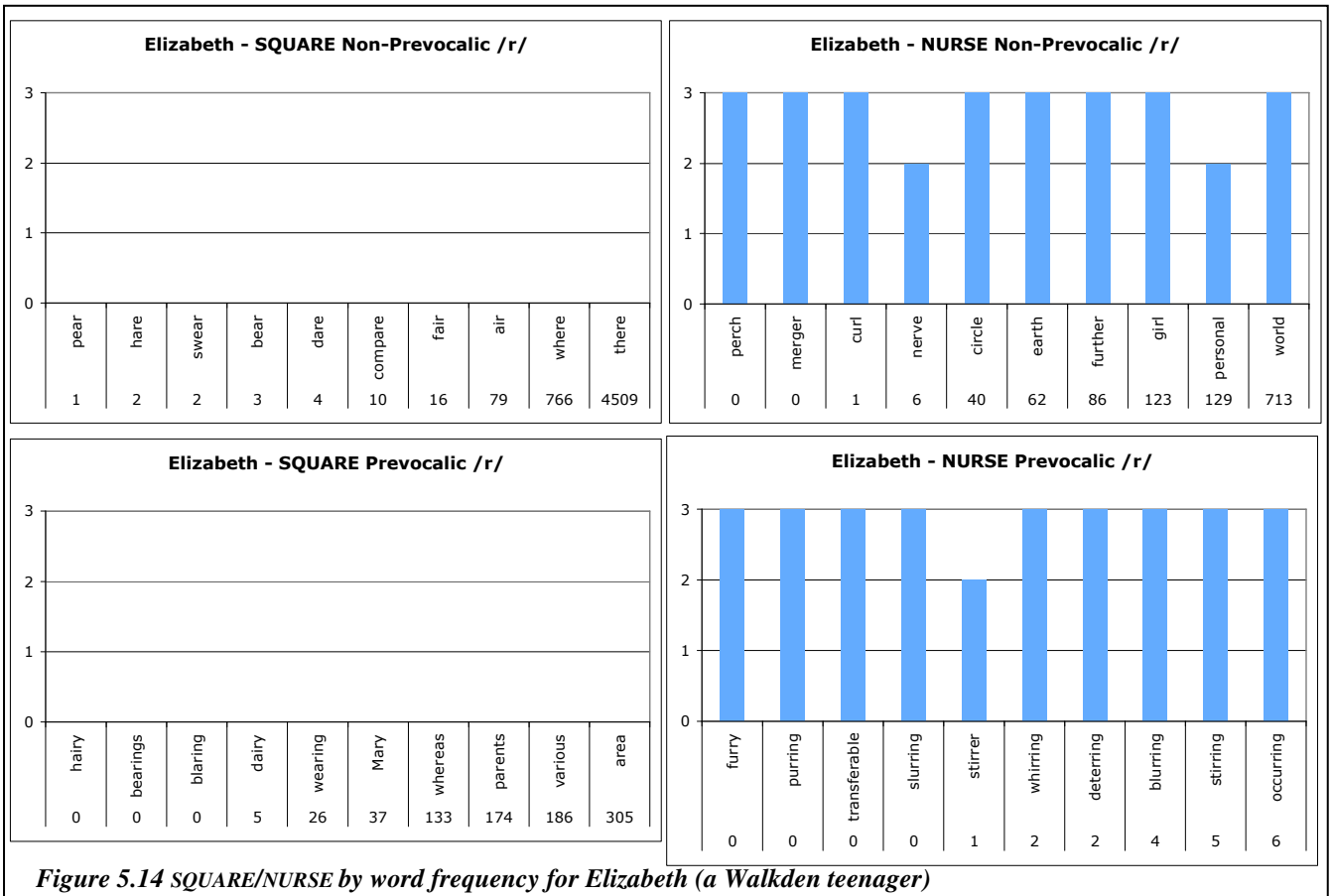


Figure 5.14 SQUARE/NURSE by word frequency for Elizabeth (a Walkden teenager)

Appendix 2

Informed Consent Form

Informed Consent Form for Dialect Survey

Please read the following information carefully. You can also request a copy for future reference. This form was prepared using guidelines from the University of Edinburgh (http://www.lel.ed.ac.uk/facilities/howto/ethics/1.shtml)

Survey: Lancashire and Manchester Speech of pensioners and teenagers.
Interviewer: Will Barras
Affiliation: University of Edinburgh

DESCRIPTION: You are invited to participate in a survey that investigates Lancashire and Manchester speech of pensioners and teenagers. In the survey, you will discuss with one of your friends your attitude to living in the Greater Manchester region. You will then be asked to use a map to give directions to your friend. This allows me to see how you talk to one another when you need to communicate precise ideas. The rest of the survey involves you reading a short story and a list of words. Finally you will be asked to listen to your voice on tape.

RISKS AND BENEFITS: The interview will be recorded using a microphone and a digital sound recorder. You will be anonymous. There are no known risks involved in this survey. You will not benefit directly by participating, although you will be helping to add to our knowledge of local dialects.

TIME INVOLVEMENT: Your participation will take approximately one hour.

SUBJECT'S RIGHTS: If you have read this form and have decided to participate in this experiment, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. You have the right to refuse to answer particular questions. Your individual privacy will be maintained in all published and written data resulting from the survey.

If you agree with the above-stated conditions and are willing to participate in the survey, please sign below. By signing the form, you confirm that you meet the following conditions:

- You have lived all your life in Bolton/Walkden/Salford (delete as applicable)
- You have read the above consent form, understood it and you agree to it.
- You want to participate in the above-mentioned survey.

Name: _____

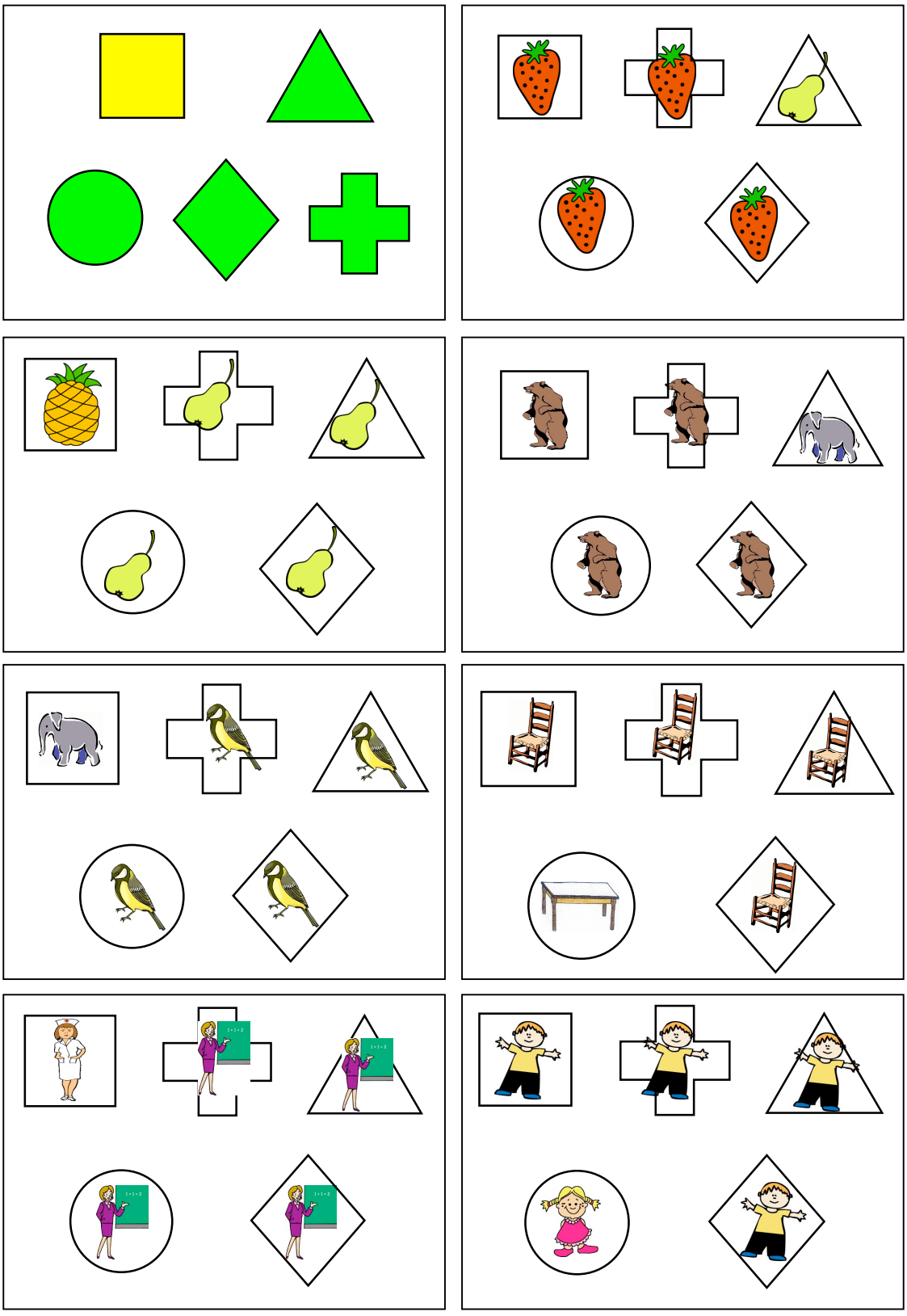
Signature: _____

Parent's/Carer's Signature (for volunteers aged under 18):_____

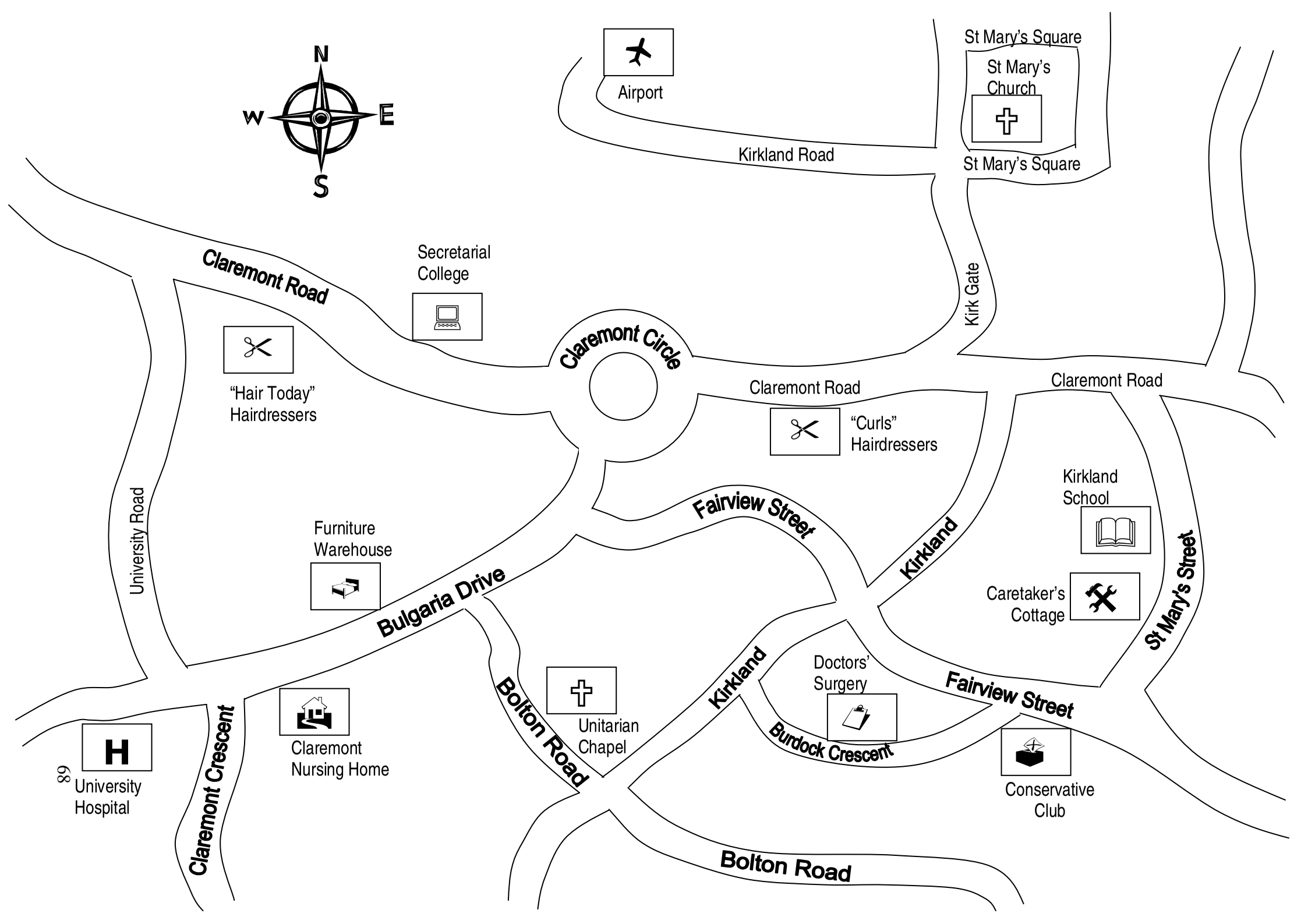
Date: _____

Appendix 3

Picture and Map Task Stimuli



This is a sample of the 36 cards used during the interviews. These images have been reduced in size: the cards used were each a full sheet of A4 paper.


N
W
E
S
Airport
St Mary's Square
St Mary's Church
St Mary's Square
Kirkland Road
Claremont Road
Secretarial College
Claremont Circle
Kirk Gate
"Hair Today" Hairdressers
Claremont Road
"Curls" Hairdressers
Claremont Road
University Road
Fairview Street
Kirkland School
Kirkland
St Mary's Street
Furniture Warehouse
Bulgaria Drive
Caretaker's Cottage
Kirkland
Doctors' Surgery
Bolton Road
Unitarian Chapel
Fairview Street
Burdock Crescent
Claremont Crescent
Claremont Nursing Home
H
University Hospital
Conservative Club
Bolton Road

Appendix 4

Reading Passage and Word List 1

One Saturday a girl called Mary went out for a walk. She was going to the park to play in the fresh air. She bought a bar of Dairy Milk chocolate from the shop. When she got to the park she saw a sparrow sitting on its perch. She saw a furry cat curl itself up, purring loudly. In the distance she could see a large rabbit or maybe it was a hare, jumping around in a circle. An old man wearing a flat cap was taking a hairy dog for a walk. Poor thing: it was a very hot day. She could hear the buzz of bees as they went whirring about. Her parents had told her not to go any further than the play area, but she decided she would dare to go and see more of the world.

It was that time of year when the fair came to town. Her mother was always deterring her from going, but she was a rebel. She walked through the park gates, and got her bearings. She had quite a nerve and had never lacked personal confidence. The first shop she passed was a greengrocer's, so she looked at the various types of fruit on sale. She bought a banana and a pear to keep her going. Next she passed a newsagent and saw the headlines about a big business merger.

She planned her route. She would need to take a bus and a tram, but luckily she would only need one transferable ticket. As she got closer, she could hear loud music blaring out. She was nearly there. She looked at all the stalls and rides. On one you could win a big teddy bear by knocking over a coconut. On another a man was making candyfloss by using a big stirrer on his stall. This place was beyond compare! She had to start somewhere, but where?

Before she knew what was occurring, she began to feel very sleepy. People's voices seemed to be slurring. She could swear she'd been about to go on the dodgems, but her memories seemed to be blurring. She woke up with a start to see her mum standing there stirring a cup of tea. Everything had seemed so real, whereas this made her realise it was a dream. It brought her back to earth again. "Time for school," said her mum.

bearings
gate
rush
transferable
climbing
poorly
purring
wearing
blaring
hope
pause
slurring
barriers
fluffy
furry
hairy
dairy
hitting
solving
stirrer
bear
explored
perch

smile
laugh
nerve
statements
swear
colleague
comfortable
merger
pear
curl
hare
noticing
reviews
circle
dare
gross
medical
deterring
Mary
producer
slogan
abandon
blurring

opponents
parents
occurring
rocket
whereas
witty
area
frightening
idle
whirring
materials
relies
stirring
various
amuse
compare
hit
personal
richer
used
where
world
air

further
includes
plates
earth
fair
one
opinions
belief
bone
girl
there

Appendix 5

Word List 2 and Commutation Test Answer Sheet

play
purr
blare
might
school
bee
fair
bet
blur
Sam
cot
fur
cough
cared
pull

bat
bite
stared
coy
hared
rye
beat
heard
boy
curd
bait
bear
show
boat
stirred

pair
psalm
pool
spur
shoe
spare
burr
bit

ply	play
purr	pair
blur	blare
might	mate
skull	school
bee	bye
fair	fur
bat	bet
blur	blare
psalm	Sam
cot	coat
fur	fair
cuff	cough
cared	curd
pull	pool

but	bat
bite	beat
stared	stirred
Kay	coy
hared	heard
row	rye
bet	beat
heard	hared
boy	buy
cared	curd
bait	Bert
burr	bear
show	shoe
boat	boot
stirred	stared

purr	pair
psalm	Sam
pull	pool
spur	spare
show	shoe
spur	spare
burr	bare
bet	bit

Appendix 6

Raw Data for Production of SQUARE and NURSE

Conversation Style: Bolton Pensioners

		FREYA
1=SQUARE 2=NURSE	Item	Index Score
1	air-raid	3
1	anywhere	3
1	there	3
1	there	2
1	where	2
2	girls	3
2	learn	3
2	learn	3
2	Thursday	3
2	were	3
2	were	2
2	were	2
2	weren't	2
2	weren't	2
2	weren't	3
2	weren't	3
2	weren't	3
2	work	3
2	worked	3
Mean SQUARE	2.60	
Mean NURSE	2.71	

		EDITH
1=SQUARE 2=NURSE	Item	Index Score
1	their	3
1	theirs	2
1	there	1
1	there	1
1	there	1
1	there	3
1	there	1
1	there	2
1	there	2
1	there	1
1	there	2
1	where	2
1	where	0
1	where	2
1	whereas	2
2	Farnworth	3
2	first	3
2	first	2
2	learn	3
2	learned	2
2	learned	3
2	Turner	3
2	work	2
2	work	3
2	worked	3
2	works	3
Mean SQUARE	1.67	
Mean NURSE	2.73	

		MADGE
1=SQUARE 2=NURSE	Item	Index Score
1	anywhere	3
1	chairs	2
1	dare	0
1	there	0
1	there	2
1	there	1
1	there	1
1	there	2
1	there	0
1	there	3
1	there	3
1	there	1
1	there	2
1	there	3
1	upstairs	2
1	wear	3
1	wear	3
1	where	3
1	where	3
1	where	3
1	where	3
1	where	1
1	where	2
1	where	2
2	church	2
2	first	3
2	first	3
2	girls	2
2	learn	3
2	were	3
2	were	3
2	were	3
2	were	3
2	weren't	3
2	work	3
2	worked	3
2	worked	3
2	working	3
2	world	3
2	world	2
Mean SQUARE	2.00	
Mean NURSE	2.81	

		EFFIE
1=SQUARE 2=NURSE	Item	Index Score
1	air	3
1	anywhere	2
1	area	1
1	bear	2
1	Mary	1
1	shared	2
1	somewhere	3
1	there	2
1	there	2
1	there	3
1	there	1
1	there	2
1	there	1
1	there	2
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	2
1	there	3
1	there	3
1	where	3
1	where	3
2	church	3
2	dirty	2
2	early	3
2	early	3
2	first	2
2	girl	3
2	girl	3
2	girl	3
2	girl	3
2	girlfriend	2
2	girls	3
2	girls	3
2	girls	3
2	hurt	3
2	hurts	3
2	nursing	3
2	sir	3
2	sir	3
2	thirteen	3
2	turn	3
2	turn	3
2	turn	3
2	turned	3
2	turned	3
2	turned	3
2	turned	2
2	turned	2
2	turned	3
2	turned	3
2	turned	3
2	turned	3
2	were	3
2	were	3
2	were	2

2	work	3
2	work	3
2	work	3
2	work	3
2	working	3
2	works	3
2	worshipped	3
Mean SQUARE	2.36	
Mean NURSE	2.85	

Conversation Style: Walkden Pensioners

		MOIRA
1=SQUARE 2=NURSE	Item	Index Score
1	bugbear	3
1	hair	2
1	prepared	3
1	rarely	3
1	there	2
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	1
1	there	2
1	there	3
1	there	3
1	there	3
1	there	3
1	upstairs	3
1	upstairs	0
1	where	1
1	where	1
1	where	3
1	where	3
1	where	3
1	where	3
1	where	3
1	where	2
1	where	3
1	where	2
1	where	3
1	where	3
2	Burgess'	3
2	burning	3
2	Burton's	3
2	Burton's	3
2	church	3
2	church	3
2	church	3
2	church	3
2	church	3
2	commercial	3
2	earned	3
2	earning	3
2	firm	3
2	firm	3
2	first	3
2	first	3
2	first	3
2	her	3
2	learned	3
2	learning	3
2	nurse	3
2	surname	3
2	Thirlmere	3
2	thirteen	3
2	thirteen	3
2	thirty	3
2	were	3
2	were	1
2	were	3
2	weren't	3
2	weren't	2
2	weren't	2
2	work	3
2	work	2
2	worked	3
2	worked	3
2	worked	3
2	worked	3
2	worse	3
2	Worsley	3
Mean SQUARE	2.55	
Mean NURSE	2.88	

		MARY
1=SQUARE 2=NURSE	Item	Index Score
1	anywhere	0
1	area	3
1	careful	2
1	daren't	0
1	hair	3
1	there	0
1	there	0
1	there	0
1	there	3
1	wear	2
1	where	3
1	where's	3
2	Burgess'	3
2	Burton's	3
2	Churchill	2
2	Farnworth	3
2	first	3
2	Kearney	3
2	Kearney	3
2	learned	3
2	nurse	3
2	thirteen	3
2	thirteen	3
2	thirteen	2
2	were	2
2	were	2
2	were	2
2	weren't	3
2	weren't	3
2	weren't	3
2	weren't	3
2	weren't	3
2	work	3
2	work	3
2	work	3
2	worked	3
2	worked	3
2	working	3
2	working	3
2	Worsley	3
Mean SQUARE	1.58	
Mean NURSE	2.82	

		JANET
1=SQUARE 2=NURSE	Item	Index Score
1	dared	0
1	daren't	0
1	daren't	0
1	daren't	0
1	pair	0
1	there	3
1	there	0
1	there	1
1	warehouse	0
1	where	0
1	where	2
2	curtains	3
2	Farnworth	3
2	Farnworth	3
2	first	3
2	first	3
2	girls	2
2	heard	3
2	nurse	3
2	nursery	3
2	turned	3
2	Turner's	3
2	were	2
2	weren't	3
2	weren't	3
2	weren't	3
2	work	3
2	work	2
2	work	3
2	work	3

2	work	3
2	work	3
2	work	3
2	worked	3
2	worked	3
2	worked	3
2	Worsley	3
2	Worsley	3
2	Worsley	3
Mean SQUARE	0.55	
Mean NURSE	2.89	

		EDIE
1=SQUARE 2=NURSE	Item	Index Score
1	area	2
1	compared	3
1	somewhere	1
1	somewhere	0
1	there	1
1	there	2
1	there	3
1	there	1
1	there	1
1	there	3
1	there	3
1	where	0
1	where	2
1	where	2
2	burdock	2
2	burdock	2
2	first	3
2	girl	3
2	girl	2
2	girl	3
2	girls	3
2	heard	3
2	heard	3
2	murdered	2
2	password	2
2	password	2
2	person	2
2	were	3
2	werent	2
2	weren't	3
2	weren't	2
2	weren't	2
2	weren't	2
2	words	2
2	work	3
2	work	3
2	worked	3
2	worked	3
2	worked	3
2	worked	3
2	worked	3
2	worked	3
2	world	3
2	Worsley	3
2	Worsley	3
2	Worsley	3
2	Worsley	3
2	Worsley	3
Mean SQUARE	1.71	
Mean NURSE	2.65	

Conversation Style: Salford Pensioners

		CATHERINE
1=SQUARE 2=NURSE	Item	Index Score
1	air	0
1	air	2
1	fair	0
1	there	0
1	there	1
1	where	0
2	church	2
2	church	2
2	weren't	3
2	working	3
2	working	2
Mean SQUARE	0.50	
Mean NURSE	2.40	

		JULIA
1=SQUARE 2=NURSE	Item	Index Score
1	there	0
1	there	0
1	there	0
1	there	0
2	church	3
2	church	2
2	Dunkirk	3
2	girls	2
2	girls	3
2	girls	2
2	weren't	3
2	work	3
2	work	3
2	worked	3
2	works	3
2	worse	3
2	worse	3
Mean SQUARE	0.00	
Mean NURSE	2.77	

		DOROTHY
1=SQUARE 2=NURSE	Item	Index Score
1	parents	0
1	stairs	0
1	there	0
1	there	0
1	wear	0
1	where	0
1	where	0
2	blurred	1
2	burn	3
2	burning	2
2	heard	3
2	hurt	3
2	hurt	3
2	universities	1
2	work	2
2	work	3
2	work	3
2	work	2
2	worked	3
2	worked	3
Mean SQUARE	0.00	
Mean NURSE	2.46	

		SADIE
1=SQUARE 2=NURSE	Item	Index Score
1	aeroplanes	0
1	aeroplanes	0
1	careful	0
1	careful	0
1	careful	0
1	careful	0
1	careful	1
1	carer	0
1	carer	0
1	carer	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	wear	0
1	wear	0
1	where	0
1	where	1
1	where	0
1	where	0
2	birthday	2
2	church	2
2	dirty	2
2	first	3
2	girl	2
2	shirt	2
2	work	3

2	work	3
2	work	3
2	worked	3
2	worked	3
Mean SQUARE	0.09	
Mean NURSE	2.55	

Conversation Style: Bolton Teenagers

		ANNE
1=SQUARE 2=NURSE	Item	Index Score
1	swear	2
1	square	3
1	air	0
1	mayor's	2
1	mayor's	3
1	mayor	2
1	wear	1
1	wear	0
1	wear	2
2	Edgeworth	3
2	Edgeworth	3
2	coursework	3
2	Berlin	3
2	skirt	3
2	skirt	3
2	burgundy	3
2	purple	2
2	circle	3
Mean SQUARE	1.67	
Mean NURSE	2.89	

		LUCY
1=SQUARE 2=NURSE	Item	Index Score
1	there	2
1	hair	2
1	wearing	3
1	there	1
1	there	3
1	aeroplane	3
1	there	2
2	girly	2
2	girls	3
2	Turkey	3
Mean SQUARE	2.29	
Mean NURSE	2.67	

		JEN
1=SQUARE 2=NURSE	Item	Index Score
1	Mary-Jane	3
1	Mary-Jane	2
1	wear	3
1	hair	3
1	wear	1
1	wear	3
1	wear	2
1	wear	2
1	anywhere	3
1	where	1
1	aeroplane	2
2	working	3
2	girls	3
2	girls	2
2	girly	3
2	girl	3
2	girl	2
2	girly	3
2	girl	3
2	girls	2
2	worse	3
2	weren't	3
2	homework	3
2	work	3
2	term	3
2	twenty-first	3
Mean SQUARE	2.27	
Mean NURSE	2.80	

		SUSIE
1=SQUARE 2=NURSE	Item	Index Score
1	there	0
1	there	2
1	square	0
1	there	0
1	there	1
1	there	1
1	there	0
1	wear	0
2	circle	2
2	homework	3
2	worse	3
2	worse	3
2	learn	2
2	learn	2
2	Berlin	2
2	nerve	2
2	Berlin	2
2	Berlin	2
2	first	3
2	circle	3
Mean SQUARE	0.50	
Mean NURSE	2.42	

Conversation Style: Walkden Teenagers

		CARLY
1=SQUARE 2=NURSE	Item	Index Score
1	anywhere	1
1	everywhere	0
1	everywhere	1
1	hairdressers	1
1	hairdressers	0
1	hairdressers	0
1	hairdressing	0
1	hairdressing	1
1	swearing	0
1	there	0
1	there	0
1	there	1
1	they're	0
1	where	0
1	where	0
2	first	3
2	girls	2
2	heard	3
2	her	3
2	Thursday	2
2	words	1
2	Worsley	3
2	worst	0
Mean SQUARE	0.33	
Mean NURSE	2.13	

		DAVINA
1=SQUARE 2=NURSE	Item	Index Score
1	care	0
1	there	0
2	first	2
2	work	3
2	working	2
2	nursery	3
Mean SQUARE	0.00	
Mean NURSE	2.50	

		ELIZABETH
1=SQUARE 2=NURSE	Item	Index Score
1	childcare	0
1	childcare	0
1	nowhere	0
1	there	0
1	there	0
1	there	0

1	there	0
1	there	0
1	there	0
1	where	0
2	Broadhurst	2
2	girl	2
2	girl	3
2	her	3
2	learn	3
2	learn	3
2	learn	3
2	nursery	3
2	nursery	3
2	turn	3
2	work	2
2	work	3
2	working	2
2	Worsley	3
2	Worsley	2
2	Worsley	3
2	Worsley	3
Mean SQUARE	0.00	
Mean NURSE	2.71	

		LAURA
1=SQUARE 2=NURSE	Item	Index Score
1	area	0
1	area	0
1	there	0
1	where	0
1	where	0
2	Farnworth	3
2	Farnworth	3
2	girl	3
2	learn	3
2	person	2
2	person	3
2	third	3
2	word	3
2	Worsley	2
2	Worsley	2
2	Worsley	3
Mean SQUARE	0.00	
Mean NURSE	2.73	

Picture Task: Bolton Pensioners

		FREYA
1=SQUARE 2=NURSE	Item	Index Score
1	bear	3
1	bear	2
1	bear	1
1	bear	2
1	chair	2
1	chair	2
1	chair	2
1	chair	2
1	chair	2
1	chair	2
1	pear	3
1	pear	3
1	pear	2
1	pear	3
1	pear	1
1	pears	2
1	square	2
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	3
1	there	1
1	there	3
1	there	3
1	there	2
1	there	2
1	there	2
1	there	3
1	there	2
1	there	3
1	there	2
1	there	2
1	there	3
2	bird	3
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	first	3
2	girl	2
2	girl	3
2	girls	3
2	nurse	3
2	nurse	3
Mean SQUARE	2.31	
Mean NURSE	2.92	

		EDITH
1=SQUARE 2=NURSE	Item	Index Score
1	bear	1
1	bear	2
1	bear	1
1	bears	2
1	chair	2
1	pair	0
1	pair	1
1	pairs	3
1	pairs	3
1	pear	3
1	pear	3
1	pear	2
1	somewhere	3
1	square	3
1	square	3
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	3
1	square	3
1	square	2
1	there	3
1	there	3
1	there	0
2	bird	3
2	bird	3
2	bird	2
2	bird	3
2	bird	2
2	bird	3
2	birds	3
2	birds	3
2	circle	3
2	first	3
2	girl	2
2	girl	3
2	girl	3
2	girls	3
2	nurse	3
2	nurse	3
2	perfect	3
2	turn	2
2	word	2
2	words	2
Mean SQUARE	2.31	
Mean NURSE	2.70	

		MADGE
1=SQUARE 2=NURSE	Item	Index Score
1	bears	2
1	bears	1
1	chair	1
1	chair	3
1	chairs	2
1	chairs	1
1	chairs	1
1	chairs	2
1	chairs	2
1	pear	2
1	pear	1
1	pear	1

1	pears	2
1	square	2
1	square	0
1	square	3
1	square	3
1	square	0
1	square	1
1	square	0
1	square	2
1	square	3
1	square	0
1	squares	3
1	there	3
1	there	3
1	there	3
1	there	1
1	there	3
1	there	3
1	there	3
1	there	3
2	bird	3
2	circle	3
2	circle	3
2	circle	3
2	girls	3
2	learning	3
2	learning	3
2	nurse	3
2	nurses	3
2	weren't	3
Mean SQUARE	1.88	
Mean NURSE	3.00	

		EFFIE
1=SQUARE 2=NURSE	Item	Index Score
1	air	2
1	bear	2
1	bear	1
1	bear	1
1	bear	2
1	bear	1
1	bear	1
1	bears	2
1	bears	2
1	chair	1
1	chair	1
1	chair	1
1	chair	3
1	chair	3
1	chair	1
1	chairs	3
1	chairs	1
1	chairs	3
1	chairs	2
1	chairs	3
1	pear	1
1	pear	2
1	pear	2
1	pears	3
1	pears	2
1	pears	1
1	pears	2
1	square	3
1	square	3
1	square	3
1	square	3
1	square	2
1	square	2
1	square	3
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	3
1	square	3
1	square	3
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	3
1	square	3
1	square	1
1	square	3

1	square	2
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	1
1	square	3
1	square	3
1	square	2
1	square	2
1	square	3
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
2	bird	1
2	bird	3
2	bird	2
2	bird	3
2	bird	2
2	bird	3
2	bird	2
2	bird	3
2	bird	3
2	bird	3
2	bird	2
2	birds	3
2	birds	3
2	circle	2
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	1
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	circle	3
2	circle	3
2	girl	2
2	girl	2
2	girl	3
2	girl	3
2	girls	3
2	heard	3
2	nurse	3
2	nurse	3
2	nurse	3
2	nurse	3
Mean SQUARE	2.34	
Mean NURSE	2.63	

Picture Task: Walkden Pensioners

		MOIRA
1=SQUARE 2=NURSE	Item	Index Score
1	bear	2
1	chairs	3
1	chairs	3

1	pear	1
1	pears	3
1	pears	2
1	polar bears	3
1	prepare	3
1	square	3
1	square	3
1	square	2
1	square	2
1	square	3
1	square	2
1	square	3
1	square	0
1	square	2
2	birds	3
2	circle	3
2	girl	3
2	nurse	3
2	nurses	3
2	working	3
Mean SQUARE	2.35	
Mean NURSE	3.00	

		MARY
1=SQUARE 2=NURSE	Item	Index Score
1	chair	3
1	pears	3
1	pears	3
1	square	3
1	square	1
1	square	3
1	square	3
1	square	3
1	square	3
1	squares	3
1	squares	1
1	stare	3
2	bird	3
2	birds	3
2	birds	3
2	circle	3
2	circle	3
2	girl	3
2	nurses	3
Mean SQUARE	2.67	
Mean NURSE	3.00	

		JANET
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bears	2
1	chairs	0
1	pears	0
1	square	0
1	square	0
1	square	0
1	square	0
2	birds	3
2	birds	3
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	girl	3
2	girls	3
2	nurses	3
Mean SQUARE	0.25	
Mean NURSE	2.89	

		EDIE
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bears	0
1	chairs	0
1	pear	0
1	pear	0
1	square	0
1	square	0
1	square	0
1	square	0

2	birds	1
2	birds	0
2	birds	3
2	girls	3
2	girls	3
2	girls	2
2	nurse	3
2	nurses	3
Mean SQUARE	0.00	
Mean NURSE	2.25	

Picture Task: Salford Pensioners

		CATHERINE
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	chair	1
1	chair	1
1	hair	0
1	pear	0
1	pear	0
1	pears	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	1
1	square	0
1	square	0
1	square	0
1	square	0
1	square	2
1	they're	0
2	bird	3
2	bird	3
2	bird	3
2	bird	3
2	circle	3
2	girls	2
2	girls	2
2	nurse	3
2	nurse	3
2	third	2
Mean SQUARE	0.28	
Mean NURSE	2.70	

		JULIA
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bear	0
1	bear	1
1	bear	0
1	chair	0
1	hair	0
1	pear	0
1	pear	1
1	square	0
1	square	0
1	square	0
1	square	0
1	square	2
1	square	0
2	bird	3
2	certainly	1
2	circle	2
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	circle	2
2	girl	2
2	nurse	2
2	nurse	3
Mean SQUARE	0.29	
Mean NURSE	2.45	

		DOROTHY
1=SQUARE 2=NURSE	Item	Index Score

1	bear	0
1	bears	0
1	bears	0
1	chair	0
1	chairs	0
1	chairs	0
1	pear	0
1	pear	0
1	pears	0
1	pears	0
1	square	0
1	square	0
1	square	0
1	square	1
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	where	0
2	bird	3
2	birds	3
2	birds	3
2	circle	2
2	circle	2
2	circle	2
2	circle	2
2	circle	2
2	girl	3
2	girl	3
2	girls	3
2	nurse	3
2	nurse	3
2	nurse	3
Mean SQUARE	0.05	
Mean NURSE	2.64	

		SADIE
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bear	0
1	bear	0
1	chair	0
1	chair	0
1	chair	0
1	pear	0
1	pear	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
2	bird	2
2	circle	2
2	circle	2
2	circle	2
2	circle	1
2	girl	2
2	nurse	2
2	nurses	3
Mean SQUARE	0.00	
Mean NURSE	2.00	

Picture Task: Bolton Teenagers

		ANNE
1=SQUARE 2=NURSE	Item	Index Score
1	square	3
1	pears	3
1	square	3
1	pears	3
1	bears	3
1	bears	3
1	square	3
1	bears	3
1	bears	3
1	square	1
1	chairs	3
1	square	2
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	birdies	3
2	circle	3
2	nurses	3
2	circle	2
2	girl	3
Mean SQUARE	2.75	
Mean NURSE	2.89	

		SUSIE
1=SQUARE 2=NURSE	Item	Index Score
1	square	0
1	square	0
1	pear	0
1	pear	0
1	bear	0
1	pears	0
1	pears	2
1	square	0
1	chair	1
1	square	0
2	birdies	2
2	circle	0
2	birds	3
2	girls	3
Mean SQUARE	0.30	
Mean NURSE	2.00	

		LUCY
1=SQUARE 2=NURSE	Item	Index Score
1	bears	3
1	bears	3
1	chairs	3
1	square	2
1	square	3
1	square	2
2	birds	2
2	circle	3
2	circle	3
2	circle	2
2	girls	3
2	nurses	3
Mean SQUARE	2.67	
Mean NURSE	2.67	

		JEN
1=SQUARE 2=NURSE	Item	Index Score
1	bear	2
1	chair	2
1	chairs	2
1	pear	3
1	pears	3
1	pears	2
1	square	1
1	square	3
1	square	3
1	square	3
1	square	2
1	square	3
1	square	2
2	bird	2
2	birds	2
2	birds	3
2	circle	3
2	circle	2
2	circle	2
2	girls	3
2	nurse	3
Mean SQUARE	2.38	
Mean NURSE	2.50	

Picture Task: Walkden Teenagers

		CARLY
1=SQUARE 2=NURSE	Item	Index Score
1	bear	1
1	bears	0
1	chair	1
1	chair	1
1	chair	1
1	chair	2
1	chairs	1
1	pear	0
1	pears	0
1	pears	0
1	square	0
1	square	1
1	square	0
1	square	0
1	square	0
1	square	0
1	square	1
1	square	0
2	birds	2
2	circle	3
2	circle	2
2	nurse	1
Mean SQUARE	0.50	
Mean NURSE	2.00	

		DANIELLE
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bears	0
1	chair	0
1	chair	0
1	chair	0
1	pear	0
1	square	0
1	square	0
1	square	0
2	birds	2
2	birds	2
2	circle	3
2	circle	1
2	circle	2
2	circle	3
2	girl	3
2	girls	2
2	nurse	3
Mean SQUARE	0.00	
Mean NURSE	2.33	

		ELIZABETH
1=SQUARE 2=NURSE	Item	Index Score
1	bears	0
1	chairs	0
1	pear	0
1	pears	0
1	pears	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
1	square	0
2	bird	3
2	birds	3
2	birds	2
2	circle	2
2	circle	2
2	nurses	2
Mean SQUARE	0.00	
Mean NURSE	2.33	

		LAURA
1=SQUARE 2=NURSE	Item	Index Score
1	bear	0
1	bears	0
1	chair	0
1	pear	0
1	square	0
1	square	0
1	square	1
2	birds	3
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	circle	3
2	girl	2
2	girls	2
2	nurse	3
Mean SQUARE	0.14	
Mean NURSE	2.78	

Map Task: Bolton Pensioners

		FREYA
1=SQUARE 2=NURSE	Item	Index Score
1	airport	1
1	Bulgaria	0
1	caretaker	2
1	Claremont	1
1	Claremont	2
1	Claremont	1
1	hair	1
1	hairdresser	2
1	hairdressers	3
1	hairdressers	2
1	Mary's	3
1	Mary's	3
1	Mary's	3
1	warehouse	3
2	church	2
2	circle	3
2	curls	3
2	furniture	3
2	Kirkland	2
2	Kirkland	3
Mean SQUARE	1.93	
Mean NURSE	2.67	

		EDITH
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	anywhere	2
1	Bulgaria	1
1	caretaker's	1
1	caretaker's	3
1	Claremont	0
1	Claremont	0
1	Claremont	3
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	2
1	Fairview	1
1	Fairview	2
1	Fairview	2
1	hair	1
1	hairdressers	2
1	Mary's	0
1	Mary's	1
1	there	3
1	there	3
1	there	2
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	2
1	there	2
1	there	3
1	there	2
1	Unitarian	0
1	warehouse	2

1	warehouse	2
1	where	3
1	where	3
2	circle	2
2	furniture	3
2	furniture	3
2	Kirk	3
2	Kirk	3
2	Kirk	2
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	working	3
Mean SQUARE	1.70	
Mean NURSE	2.80	

		MADGE
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	airport	1
1	Bulgaria	2
1	Bulgaria	2
1	caretaker's	3
1	caretaker's	2
1	chair	3
1	Claremont	0
1	Claremont	1
1	Claremont	2
1	Claremont	0
1	Claremont	1
1	Fairview	1
1	Fairview	1
1	Fairview	1
1	Fairview	3
1	Fairview	1
1	Fairview	2
1	hair	3
1	hair	3
1	hair	3
1	hair	1
1	hairdresser	2
1	hairdressers	3
1	hairdressers	3
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	1
1	Mary's	1
1	secretarial	1
1	square	2
1	square	2
1	square	3
1	there	3
1	there	3
1	there	0
1	there	2
1	there	1
1	there	2
1	there	3
1	there	3
1	there	3
1	there	3
1	Unitarian	2
1	warehouse	3
1	Warehouse	3
1	where	3
2	church	3
2	church	2
2	Circle	3
2	circle	3
2	Conservative	2
2	Conservative	2
2	curling	3
2	curling	3
2	furniture	3
2	Furniture	3
2	Kirk	3
2	Kirk	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	surgery	3
2	surgery	3

2	weren't	3
Mean SQUARE	1.73	
Mean NURSE	2.83	

		EFFIE
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	airport	0
1	airport	1
1	airport	2
1	Bulgaria	2
1	Bulgaria	3
1	Bulgaria	2
1	Bulgaria	3
1	Bulgaria	3
1	Bulgaria	3
1	Bulgaria	3
1	Bulgaria	3
1	Caretaker's	3
1	Caretaker's	3
1	Caretaker's	3
1	Claremont	1
1	Claremont	2
1	Claremont	1
1	Claremont	0
1	Claremont	1
1	Claremont	0
1	Claremont	3
1	Claremont	3
1	Claremont	1
1	Claremont	3
1	Claremont	0
1	Claremont	3
1	Claremont	2
1	Claremont	3
1	Claremont	1
1	Claremont	0
1	Claremont	0
1	Claremont	3
1	Claremont	3
1	Claremont	3
1	Claremont	3
1	fair	3
1	Fairview	3
1	Fairview	3
1	Fairview	2
1	Fairview	3
1	Fairview	0
1	Fairview	2
1	Fairview	1
1	hair	2
1	hair	2
1	hair	1
1	hair	2
1	hairdressers	1
1	hairdressers	1
1	hairdressers	3
1	hairdressers	2
1	hairdressers	0
1	hairdressers	3
1	Mary's	0
1	Mary's	1
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	1
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	secretarial	2
1	secretarial	2
1	square	1
1	square	3
1	square	3
1	square	1
1	there	3
1	there	3
1	there	3
1	there	3
1	there	3
1	there	1
1	there	3
1	there	0
1	there	2

1	Unitarian	1
1	Unitarian	1
1	warehouse	2
1	warehouse	3
1	warehouse	3
1	where	1
2	Burdock	1
2	Burdock	2
2	church	3
2	church	2
2	Circle	3
2	Circle	3
2	Circle	1
2	Conservative	3
2	Conservative	2
2	furniture	2
2	Furniture	2
2	Kirk	3
2	Kirk	3
2	Kirk	3
2	Kirk	3
2	Kirkgate	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	2
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	nursing	3
2	nursing	3
2	surgery	3
2	surgery	3
2	surgery	3
2	turn	2
2	turn	2
2	turn	1
2	turn	2
2	turn	2
2	University	3
2	University	3
2	University	3
2	University	3
2	University	2
2	University	2
Mean SQUARE	1.74	
Mean NURSE	2.54	

Map Task: Walkden Pensioners

		MOIRA
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Claremont	0
1	Claremont	0
1	Fairview	2
1	Fairview	1
1	hairdressers	3
1	parents	0
1	secretarial	2
1	there	3
1	there	3
1	there	3
1	where	2
1	where	3
1	where	3
2	Burdock	3
2	Burdock	3
2	church	3
2	circle	2
2	circle	2
2	Conservative	3
2	Conservative	3
2	curls	3
2	kirk	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	turn	3
2	turn	3
2	turn	3
2	turn	2
2	turn	3
2	working	3
Mean SQUARE	1.47	
Mean NURSE	2.83	

		MARY
1=SQUARE 2=NURSE	Item	Index Score
1	anywhere	1
1	Bulgaria	0
1	caretaker's	3
1	caretaker's	3
1	caretaker's	3
1	Claremont	0
1	Claremont	2
1	Claremont	2
1	Claremont	3
1	Fairview	1
1	Fairview	2
1	hairdressers	3
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	square	2
1	there	0
1	there	1
1	where	3
1	where	3
1	where's	3
1	where's	3
2	church	3
2	Conservative	3
2	Conservative	3
2	Kirkgate	3
2	surgery	3
Mean SQUARE	1.65	
Mean NURSE	3.00	

		JANET
1=SQUARE 2=NURSE	Item	Index Score
1	Bulgaria	1
1	Bulgaria	0
1	Claremont	1
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	hairdressers	0
1	Mary's	0
1	secretarial	0
1	there	0
1	there	0
1	where's	3
1	where's	0
2	circle	3
2	Conservative	3
2	Conservative	3
2	curls	3
2	Kirkland	2
Mean SQUARE	0.29	
Mean NURSE	2.80	

		EDIE
1=SQUARE 2=NURSE	Item	Index Score
1	Bulgaria	3
1	Bulgaria	3
1	caretaker's	0
1	Claremont	1
1	Claremont	2
1	Claremont	3
1	Claremont	3
1	Claremont	3
1	Claremont	1
1	Claremont	2
1	Claremont	0
1	Fairview	0

1	hairdressers	0
1	hairdressers	3
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	square	0
1	there	3
1	warehouse	0
1	where	0
2	church	3
2	circle	3
2	circle	2
2	first	3
2	furniture	3
2	Kirk	3
2	Kirkland	2
2	University	2
2	University	3
2	University	2
2	University	2
2	words	3
Mean SQUARE	1.29	
Mean NURSE	2.58	

Map Task: Salford Pensioners

		CATHERINE
1=SQUARE 2=NURSE	Item	Index Score
1	Bulgaria	1
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	1
1	Fairview	0
1	Fairview	0
1	Fairview	1
1	Fairview	0
1	Mary's	1
1	Mary's	0
1	Mary's	0
1	Mary's	1
1	square	0
1	there	1
1	where	1
2	Kirkland	2
2	Kirkland	2
Mean SQUARE	0.44	
Mean NURSE	2.00	

		JULIA
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	Bulgaria	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	3
1	Mary's	1
1	Mary's	0
1	square	0
1	there	0
1	warehouse	0
2	church	3
2	Circle	2
2	Circle	3
2	Circle	2
2	Conservative	3
2	furniture	3
2	Kirk	3
2	Kirk	3
2	Kirkland	3
2	Kirkland	3
Mean SQUARE	0.31	
Mean NURSE	2.80	

		DOROTHY

1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	Bulgaria	0
1	caretaker's	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	hair	0
1	hair	0
1	hairdressers	0
1	hairdressers	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Square	0
1	there	0
1	there	1
1	Unitarian	0
1	warehouse	0
1	where	0
2	Burdock	3
2	Church	2
2	Church	2
2	Church	3
2	Circle	1
2	curls	3
2	furniture	2
2	furniture	2
2	Kirk	3
2	Kirk	3
2	Kirk	3
2	Kirkland	2
2	Kirkland	3
2	Kirkland	2
2	nursing	2
2	university	1
Mean SQUARE	0.04	
Mean NURSE	2.31	

		SADIE
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	airport	0
1	caretaker	0
1	caretaker	1
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	hairdessers	0
1	hairdresser	0
1	Mary	0
1	Mary	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	where	0
2	church	2
2	University	3
2	word	3
Mean SQUARE	0.07	
Mean NURSE	2.67	

Map Task: Bolton Teenagers

		ANNE
1=SQUARE 2=NURSE	Item	Index Score
1	Claremont	3
1	Claremont	3
1	Bulgaria	0
1	where	1
1	Claremont	2
1	Claremont	2

1	Bulgaria	3
1	Fairview	0
1	Claremont	0
1	hair	3
1	Fairview	0
1	Bulgaria	3
1	Claremont	1
1	Claremont	1
1	Sarah	3
1	there	3
1	there	3
2	Kirk	3
2	Kirk	3
2	Circle	3
2	Kirkland	3
2	Burdock	3
2	Kirk	3
2	Circle	3
2	Curls	2
2	Kirkland	2
2	turn	3
2	Kirkland	3
2	Circle	2
2	Nursing	3
2	Kirkland	3
2	turn	3
2	circles	0
Mean SQUARE	1.82	
Mean NURSE	2.63	

		SUSIE
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	there	0
1	there	0
1	Bulgaria	0
1	Claremont	0
1	Claremont	0
1	Claremont	1
1	Mary's	0
1	there	0
1	Sarah	0
1	Sarah	0
1	Mary's	0
1	warehouse	0
1	warehouse	0
1	hairdressers	0
1	hairdressers	0
1	Bulgaria	0
1	Bulgaria	0
1	Claremont	0
1	Claremont	0
1	Mary's	0
2	surgery	3
2	Circle	1
2	burning	2
2	church	3
2	furniture	3
2	furniture	3
2	Kirkland	1
2	Burdock	2
2	Nursing	3
2	Circle	1
Mean SQUARE	0.05	
Mean NURSE	2.20	

		LUCY
1=SQUARE 2=NURSE	Item	Index Score
1	where	3
1	anywhere	3
1	Claremont	1
1	Claremont	3
1	Claremont	1
1	there	3
1	there	2
1	Mary's	0
1	Bulgaria	3
1	Hair	3
1	hairdressers	3
1	Hair	3
1	where	1
1	where	1
1	hairdressers	3

1	hair	2
1	hairdressers	3
1	warehouse	3
1	Bulgaria	3
1	fairview	2
1	hairdressers	3
1	Mary's	3
2	Circle	3
2	church	3
2	Conservative	2
2	Kirkland	3
2	first	3
2	first	3
2	first	3
2	first	3
2	first	3
2	Kirkland	3
2	circle	3
2	university	3
2	university	3
2	furniture	3
2	curls	3
2	Kirkland	3
2	first	3
2	Kirkgate	3
2	Church	3
Mean SQUARE	2.36	
Mean NURSE	2.95	

		JEN
1=SQUARE 2=NURSE	Item	Index Score
1	airport	2
1	Bulgaria	3
1	Bulgaria	3
1	Bulgaria	2
1	caretaker	3
1	Claremont	3
1	Claremont	1
1	fairview	3
1	hair	3
1	hair	3
1	hair	3
1	hair	3
1	hair	3
1	hairdressers	3
1	Mary	3
1	Mary's	1
1	Mary's	2
1	Mary's	3
1	Mary's	2
1	there	1
1	there	2
1	there	3
1	there	3
1	warehouse	3
1	where's	3
2	church	3
2	church	3
2	circle	3
2	circle	2
2	circle	3
2	Conservative	3
2	curls	2
2	curls	3
2	furniture	3
2	Kirk	3
2	turn	3
2	university	3
2	university	3
Mean SQUARE	2.56	
Mean NURSE	2.85	

Map Task: Walkden Teenagers

		CARLY
1=SQUARE 2=NURSE	Item	Index Score
1	airport	1
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	1

1	caretaker	2
1	caretaker	2
1	caretaker	1
1	Claremont	0
1	Claremont	0
1	Claremont	1
1	Claremont	0
1	Claremont	0
1	Claremont	1
1	Claremont	0
1	fair	1
1	Fairview	1
1	hair	0
1	hairdressers	0
1	Mary's	1
1	Mary's	0
1	Mary's	1
1	Mary's	2
1	square	0
1	there	0
1	there	0
1	there	0
1	there's	0
1	there's	0
1	Unitarian	0
1	Unitarian	0
1	warehouse	0
1	where	0
1	where	0
2	Burdock	2
2	Burdock	2
2	church	3
2	church	2
2	Circle	1
2	circle	2
2	Circle	3
2	first	2
2	first	2
2	first	2
2	first	2
2	first	3
2	first	3
2	furniture	2
2	Kirk	3
2	Kirk	3
2	Kirkland	2
2	Kirkland	3
2	Kirkland	2
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	3
2	Kirkland	2
2	Kirkland	2
2	Kirkland	2
2	Kirkland	3
2	nursery	2
2	prefer	3
2	turn	2
2	turn	2
2	turn	2
2	turn	2
2	university	2
2	university	3
2	university	3
2	university	2
Mean SQUARE	0.44	
Mean NURSE	2.38	

		DAVINA
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	airport	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Caretaker	0
1	Caretaker	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0

1	Claremont	0
1	Claremont	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	hair	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	Unitarian	0
1	warehouse	0
1	where	0
2	Burdock	3
2	circle	1
2	circle	1
2	Conservative	3
2	first	2
2	first	2
2	furniture	2
2	Kirk	2
2	Kirk	1
2	Kirk	2
2	Kirk	2
2	Kirkland	1
2	Kirkland	2
2	Kirkland	2
2	turn	3
2	turn	3
2	turn	3
2	turn	3
2	turn	3
2	turn	3
2	turn	2
2	turn	1
2	turn	3
2	university	2
2	university	2
2	university	1
2	university	2
2	work	1
Mean SQUARE	0.00	
Mean NURSE	2.07	

		ELIZABETH
1=SQUARE 2=NURSE	Item	Index Score
1	Bulgaria	0
1	Bulgaria	0
1	Claremont	0
1	Claremont	0
1	hair	0
1	hairdressers	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	square	0
1	square	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	there	0
1	warehouse	0
1	where's	0
2	church	3
2	curls	2
2	first	2
2	first	3
2	first	3
2	furniture	3
2	Kirkland	2

2	Kirkland	2
2	Kirkland	3
2	nursing	3
2	roadworks	3
2	roadworks	2
2	roadworks	2
2	turn	2
2	turn	3
2	turn	3
2	turn	3
2	turn	3
2	turn	2
2	turn	2
2	turn	2
2	turning	3
2	universal	3
2	university	3
Mean SQUARE	0.00	
Mean NURSE	2.58	

		LAURA
1=SQUARE 2=NURSE	Item	Index Score
1	airport	0
1	areas	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	Bulgaria	0
1	caretaker's	0
1	caretaker's	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Claremont	0
1	Fairview	0
1	Fairview	0
1	Fairview	0
1	hairdressers	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	Mary's	0
1	secretarial	0
1	there's	0
1	warehouse	0
1	where	0
2	church	2
2	church	3
2	circle	3
2	Circle	2
2	circle	3
2	conservative	3
2	curls	3
2	furniture	3
2	Kirk	2
2	Kirkland	2
2	Kirkland	3
2	Kirkland	1
2	Kirkland	2
2	Kirkland	2
2	Kirkland	2
2	nursing	3
2	roadworks	2
2	surgery	2
2	turn	3
2	turn	2
2	University	3
Mean SQUARE	0.00	
Mean NURSE	2.43	

RPS: Bolton Pensioners

		FREYA	EDITH	MADGE	EFFIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	Mary	1	0	0	1
1	air	2	1	0	2
1	dairy	2	1	0	2
1	hare	2	2	1	1
1	wearing	2	0	0	3
1	hairy	3	1	0	1
1	parents	2	2	3	0
1	area	3	1	3	3
1	dare	1	0	1	2
1	fair	3	2	2	1
1	bearings	3	1	0	0
1	various	1	0	1	0
1	pear	3	2	2	2
1	blaring	3	1	0	1
1	there	0	3	0	1
1	bear	2	2	1	2
1	compare	3	1	1	2
1	where	2	3	3	3
1	swear	2	3	3	3
1	whereas	3	2	1	3
2	girl	3	2	3	2
2	perch	3	3	3	2
2	furry	3	2	3	1
2	curl	3	3	3	3
2	purring	2	1	3	1
2	circle	3	3	2	2
2	whirring	3	3	3	2
2	further	3		2	2
2	world	2	2	2	3
2	deterring	3	2	3	1
2	nerve	3	2	3	2
2	personal	3	3	3	2
2	merger	3	3	3	3
2	transferable	3	2	2	1
2	stirrer	3	2	2	1
2	occurring	3	0	3	1
2	slurring	3	1	3	3
2	blurring	3	2	3	2
2	stirring	3	1	1	1
2	earth	2	3	3	3
Mean SQUARE		2.15	1.40	1.10	1.65
Mean NURSE		2.85	2.11	2.65	1.90

RPS: Walkden Pensioners

		MOIRA	MARY	JANET	EDIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	Mary	1		1	1
1	air	1		0	0
1	dairy	2		0	0
1	hare	1		0	1
1	wearing	3		2	0
1	hairy	0		0	0
1	parents	2		1	0
1	area	1		1	0
1	dare	2		0	0
1	fair	2		0	0
1	bearings	0		0	0
1	various	1		1	0
1	pear	2		0	0
1	blaring	2		0	3
1	there	2		0	0
1	bear	3		0	0
1	compare	2		1	3
1	where	3		0	0
1	swear	3		0	0
1	whereas	2		2	0
2	girl	3		3	2
2	perch	3		3	3
2	furry	2		3	2
2	curl	3		3	3
2	purring	1		3	3
2	circle	3		3	2
2	whirring	3		3	3
2	further	3		3	1
2	world	2		3	3
2	deterring			3	3
2	nerve	3		3	2
2	personal	3		3	3

2	merger	3		3	2
2	transferable	2		3	3
2	stirrer	3		2	3
2	occurring	3		3	3
2	slurring	3		2	2
2	blurring	3		3	3
2	stirring	3		3	2
2	earth	3		3	3
Mean SQUARE		1.75	-	0.45	0.40
Mean NURSE		2.74	-	2.90	2.55

RPS: Salford Pensioners

		CATHERINE	JULIA	DOROTHY	SADIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	Mary	0	0	0	0
1	air	0	0	0	0
1	dairy	0	0	0	0
1	hare	0	0	0	0
1	wearing	0	0	0	0
1	hairy	0	0	0	0
1	parents	0	0	0	0
1	area	0	0	0	0
1	dare	0	0	0	0
1	fair	0	0	0	0
1	bearings	0	0	0	0
1	various	1	0	0	0
1	pear	0	0	0	0
1	blaring	0	0	0	0
1	there	0	0	0	0
1	bear	0	0	0	0
1	compare	0	0	0	0
1	where	0	0	0	0
1	swear	0	0	0	0
1	whereas	1	0	0	0
2	girl	2	2	3	3
2	perch	3	3	2	2
2	furry	3	3	3	3
2	curl	2	3	3	3
2	purring	2	3	2	2
2	circle	2	2	1	1
2	whirring	3	3	3	3
2	further	3	3	2	2
2	world	2	3	2	3
2	deterring	3	2	2	3
2	nerve	2	2	3	3
2	personal	3	3	2	2
2	merger	3	3	2	3
2	transferable	3	3	3	3
2	stirrer	2	2	2	2
2	occurring	2	3	3	3
2	slurring	2	3	2	2
2	blurring	2	2	3	3
2	stirring	2	3	3	3
2	earth	3	3	1	3
Mean SQUARE		0.10	0.00	0.00	0.00
Mean NURSE		2.45	2.68	2.35	2.60

RPS: Bolton Teenagers

		ANNE	SUSIE	LUCY	JEN
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	Mary	0	0	2	3
1	air	1	1	3	3
1	dairy	0	0	3	3
1	hare	1	0	3	3
1	wearing	0	2	2	3
1	hairy	0	0	3	3
1	parents	0	0	3	2
1	area	0	0	2	2
1	dare	0	0	3	3
1	fair	1	0	3	3
1	bearings	0	0	3	3
1	various	1	0	3	3
1	pear	0	0	3	3
1	blaring	0	0	3	2
1	there	0	0	3	3
1	bear	1	0	3	3
1	compare	0	0	3	3
1	where	0	0	3	3
1	swear	0	0	2	2
1	whereas	0	1	2	3

2	girl	2	2	3	3
2	perch	3	3	3	3
2	furry	3	3	3	3
2	curl	3	3	3	3
2	purring	2	3	3	3
2	circle	3	1	3	3
2	whirring	2		2	3
2	further	3	2	3	3
2	world	2	2	3	3
2	deterring	1	1	3	3
2	nerve	3	2	3	2
2	personal	3	3	3	3
2	merger	2	2	3	3
2	transferable	2	3	3	3
2	stirrer	2	3	3	3
2	occurring	2	3	2	3
2	slurring	2	3	3	3
2	blurring	2	2	2	3
2	stirring	3	3	3	2
2	earth	3	3	3	3
Mean SQUARE		0.25	0.20	2.75	2.80
Mean NURSE		2.40	2.47	2.85	2.90

RPS: Walkden Teenagers

		CARLY	DAVINA	ELIZABETH	LAURA
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	Mary	1	0	0	1
1	air	0	0	0	0
1	dairy	0	0	0	0
1	hare	1	0	0	1
1	wearing	0	0	0	0
1	hairy	0	0	0	0
1	parents	0	0	0	0
1	area	1	0	0	0
1	dare	0	0	0	0
1	fair	0	0	0	0
1	bearings	0	0	0	0
1	various	0	0	0	0
1	pear	0	0	0	0
1	blaring	0	0	0	0
1	there	0	0	0	0
1	bear	1	0	0	0
1	compare	0	0	0	0
1	where	0	0	0	0
1	swear	0	0	0	0
1	whereas	0	0	0	1
2	girl	2	2	3	3
2	perch	3	2	3	2
2	furry	2	2	3	3
2	curl	2	2	3	3
2	purring	2	3	3	3
2	circle	3	2	3	3
2	whirring	2	3	3	3
2	further	3	3	3	2
2	world	2	3	3	2
2	deterring	0	3	3	1
2	nerve	2	2	2	2
2	personal	2	3	2	3
2	merger	3	3	3	3
2	transferable	3	3	3	3
2	stirrer	3	2	2	3
2	occurring	2	3	3	1
2	slurring	3	2	3	3
2	blurring	2	2	3	2
2	stirring	3	3	3	3
2	earth	3	3	3	3
Mean SQUARE		0.20	0.00	0.00	0.15
Mean NURSE		2.35	2.53	2.85	2.55

WLS1: Bolton Pensioners

		FREYA	EDITH	MADGE	EFFIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	air	3	0	0	3
1	area	2	1	0	1
1	bear	3	0	0	2
1	bearings	3	0	0	1
1	blaring	3	0	0	3
1	compare	3	0	1	2
1	dairy	2	0	0	3
1	dare	3	1	0	1

1	fair	2	1	0	2
1	hairy	3	0		1
1	hare	1	2	0	2
1	Mary	1	0	0	2
1	parents	1	0	0	0
1	pear	3	2	2	2
1	swear	1	0	2	2
1	there	3	3	0	1
1	various	3	2	0	2
1	wearing	3	1	0	3
1	where	3	3	0	2
1	whereas	3	2	1	2
2	blurring	2	2	2	2
2	circle	3	3	3	3
2	curl	2	3	2	2
2	deterring	3	1	0	1
2	earth	3	3	3	3
2	furry	3	3	3	1
2	further	3	3	2	3
2	girl	3	3	2	2
2	merger	3	3	2	3
2	nerve	2	3	3	3
2	occurring	3	0	3	2
2	perch	3	3	2	3
2	personal	2	3	2	3
2	purring	3	1	3	2
2	slurring	3	1	1	0
2	stirrer	3	1	2	2
2	stirring	3	2	3	1
2	transferable	3	0	1	0
2	whirring	3	1	2	2
2	world	3	3	3	3
Mean SQUARE		2.45	0.90	0.32	1.85
Mean NURSE		2.80	2.10	2.20	2.05

WLS1: Walkden Pensioners

		MOIRA	MARY	JANET	EDIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	air	3		0	0
1	area	0		0	0
1	bear	2		1	0
1	bearings	0		0	0
1	blaring	0		0	0
1	compare	0		0	2
1	dairy	1		0	0
1	dare	3		2	0
1	fair	3		0	0
1	hairy	1		0	0
1	hare	2		0	0
1	Mary	0		0	0
1	parents	3		0	0
1	pear	1		1	0
1	swear	3		0	0
1	there	3		0	0
1	various	0		0	0
1	wearing	0		0	0
1	where	3		0	0
1	whereas	1		1	1
2	blurring	2		3	
2	circle	3		3	3
2	curl	3		3	3
2	deterring			3	3
2	earth	3		3	3
2	furry	3		3	
2	further	2		2	3
2	girl	3		3	3
2	merger	3		2	3
2	nerve	3		3	3
2	occurring	2		3	3
2	perch	3		3	3
2	personal	2		2	2
2	purring	3		3	2
2	slurring	3		3	2
2	stirrer	1		3	3
2	stirring	0		3	0
2	transferable	2		3	2
2	whirring	0		3	3
2	world	3		3	3
Mean SQUARE		1.45	-	0.25	0.15
Mean NURSE		2.32	-	2.85	2.61

WLS1: Salford Pensioners

		CATHERINE	JULIA	DOROTHY	SADIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	air	0	0	0	0
1	area	0	0	0	0
1	bear	1	0	0	0
1	bearings	0	0	0	0
1	blaring	2	0	0	0
1	compare	0	0	0	0
1	dairy	1	0	0	0
1	dare	0	0	0	0
1	fair	1	0	0	0
1	hairy	1	0	0	0
1	hare	1	0	0	0
1	Mary	0	0	0	0
1	parents	0	0	0	0
1	pear	1	0	0	0
1	swear	0	0	0	0
1	there	0	0	0	0
1	various	0	0	0	0
1	wearing	0	0	0	0
1	where	0	0	0	0
1	whereas	2	0	0	0
2	blurring	2	3	2	3
2	circle	2	2	1	2
2	curl	1	2	3	3
2	deterring	2	0	3	3
2	earth	2	3	2	2
2	furry	3	3	3	1
2	further	2	3	2	3
2	girl	3	2	3	2
2	merger	3	3	1	3
2	nerve	3	3	2	3
2	occurring	1	3	3	3
2	perch	3	3	2	2
2	personal	2	3	3	3
2	purring	1	3	3	3
2	slurring	3	3	1	2
2	stirrer	2	3	1	3
2	stirring	3	2	1	2
2	transferable	3	3	2	3
2	whirring	3	3	3	3
2	world	3	3	3	3
Mean SQUARE		0.50	0.00	0.00	0.00
Mean NURSE		2.35	2.65	2.20	2.60

WLS1: Bolton Teenagers

		ANNE	SUSIE	LUCY	JEN
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	air	0	0	3	3
1	area	0	0	3	3
1	bear	0	0	2	3
1	bearings	0	0	2	2
1	blaring	0	0	3	3
1	compare	0	0	3	3
1	dairy	1	0	3	3
1	dare	0	0	3	3
1	fair	1	0	3	3
1	hairy	0	0	3	3
1	hare	0	0	3	3
1	Mary	0	0	3	2
1	parents	0	0	3	2
1	pear	0	0	3	3
1	swear	1	0	3	3
1	there	1	0	3	3
1	various	0	0	3	3
1	wearing	0	0	3	3
1	where	0	0	3	3
1	whereas	1	0	3	3
2	blurring	3	3	3	3
2	circle	3	3	3	3
2	curl	2	2	3	3
2	deterring	2	1	3	3
2	earth	3	3	3	3
2	furry	3	3	3	3
2	further	3	2	3	3
2	girl	2	2	3	3
2	merger	3	1	3	3
2	nerve	3	3	3	3
2	occurring	3	3	3	2
2	perch	2	2	3	3
2	personal	3	3	3	3

2	purring	3	3	3	3
2	slurring	3	3	3	3
2	stirrer	3	2	3	3
2	stirring	3	3	3	3
2	transferable	2	1	3	2
2	whirring	3	1	2	3
2	world	2	3	3	3
Mean SQUARE		0.25	0.00	2.90	2.85
Mean NURSE		2.70	2.35	2.95	2.90

WLS1: Walkden Teenagers

		CARLY	DAVINA	ELIZABETH	LAURA
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	air	0	0	0	0
1	area	0	0	0	0
1	bear	0	0	0	0
1	bearings	0	0	0	0
1	blaring	0	0	0	0
1	compare	0	0	0	0
1	dairy	0	0	0	0
1	dare	0	0	0	0
1	fair	0	0	0	0
1	hairy	0	0	0	0
1	hare	0	0	0	0
1	Mary	0	0	0	0
1	parents	0	0	0	0
1	pear	0	0	3	0
1	swear	0	0	0	0
1	there	0	0	0	0
1	various	0	0	0	0
1	wearing	0	0	0	0
1	where	0	0	0	0
1	whereas	0	0	0	0
2	blurring	2	3	3	3
2	circle	3	3	2	2
2	curl	2	2	3	2
2	deterring	0	1	3	3
2	earth	2	3	3	2
2	furry	3	2	3	3
2	further	3	2	3	3
2	girl	2	3	2	2
2	merger	3	3	3	3
2	nerve	2	3	3	1
2	occurring	3	3	3	2
2	perch	3	2	2	2
2	personal	2	2	2	2
2	purring	3	3	3	2
2	slurring	3	3	3	3
2	stirrer	2	2	3	3
2	stirring	2	3	3	2
2	transferable	3	2	3	2
2	whirring	2	2	2	3
2	world	2	3	3	3
Mean SQUARE		0.00	0.00	0.15	0.00
Mean NURSE		2.35	2.50	2.75	2.40

WLS2: Bolton Pensioners

		FREYA	EDITH	MADGE	EFFIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	blare	2	0		3
1	fair	2	0	3	1
1	cared	3	3	1	1
1	stared	3	1	0	0
1	hared	1	1	0	0
1	bear	3	2	0	1
1	pair	3	0	0	2
1	spare	3	1	0	3
2	purr	3	0	3	2
2	blur	3	2		3
2	fur	3	2	2	3
2	heard	3	2	1	3
2	curd	1	2	2	2
2	stirred	3	2	3	1
2	spur	3	2	1	3
2	burr	3	2	3	3
Mean SQUARE		2.50	1.00	0.57	1.38
Mean NURSE		2.75	1.75	2.14	2.50

WLS2: Walkden Pensioners

		CARLY	DAVINA	ELIZABETH	LAURA
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	blare	0	0	0	0
1	fair	0	0	0	0
1	cared	0	0	0	0
1	stared	0	0	1	0
1	hared	1	0	0	0
1	bear	0	0	0	0
1	pair	0	0	0	0
1	spare	0	0	1	0
2	purr	3	3	3	2
2	blur	3	3	3	3
2	fur	3	3	3	2
2	heard	3	3	2	3
2	curd	3	3	3	3
2	stirred	3	2	3	3
2	spur	2	2	3	3
2	burr	3	3	3	3
Mean SQUARE		0.13	0.00	0.25	0.00
Mean NURSE		2.88	2.75	2.88	2.75

WLS2: Salford Pensioners

		CATHERINE	JULIA	DOROTHY	SADIE
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	blare	1	1	0	0
1	fair	0	1	0	0
1	cared	0	0	0	0
1	stared	1	0	0	0
1	hared	0	0	0	0
1	bear	2	0	0	0
1	pair	0	0	0	0
1	spare	1	1	0	0
2	purr	3	2	2	3
2	blur	3	1	3	2
2	fur	3	3	2	2
2	heard	3	3	3	2
2	curd	3	3	3	3
2	stirred	3	3	3	2
2	spur	2	2	1	2
2	burr	3	3	2	3
Mean SQUARE		0.63	0.38	0.00	0.00
Mean NURSE		2.88	2.50	2.38	2.38

WLS2: Bolton Teenagers

		ANNE	SUSIE	LUCY	JEN
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	blare	0	1	3	2
1	fair	0	0	3	3
1	cared	0	0	3	3
1	stared	1	0	3	2
1	hared	0	0	3	3
1	bear	0	0	2	3
1	pair	0	0	3	3
1	spare	0	1	2	3
2	purr	3	2	3	3
2	blur	3	2	3	3
2	fur	3	3	3	3
2	heard	2	2	3	3
2	curd	2	2	3	3
2	stirred	3	3	3	3
2	spur	3	2	3	3
2	burr	3	3	3	3
Mean SQUARE		0.13	0.25	2.75	2.75
Mean NURSE		2.75	2.38	3.00	3.00

WLS2: Walkden Teenagers

		CARLY	DAVINA	ELIZABETH	LAURA
1=SQUARE 2=NURSE	Item	Index Score	Index Score	Index Score	Index Score
1	blare	0	0	0	0
1	fair	0	0	0	0
1	cared	0	0	0	0
1	stared	0	0	1	0

1	hared	1	0	0	0
1	bear	0	0	0	0
1	pair	0	0	0	0
1	spare	0	0	1	0
2	purr	3	3	3	2
2	blur	3	3	3	3
2	fur	3	3	3	2
2	heard	3	3	2	3
2	curd	3	3	3	3
2	stirred	3	2	3	3
2	spur	2	2	3	3
2	burr	3	3	3	3
Mean SQUARE		0.13	0.00	0.25	0.00
Mean NURSE		2.88	2.75	2.88	2.75